“Fair is foul, and foul is fair; Hover through the fog and filthy air.”
— Macbeth, Act 1, Scene 1

The apportionment ratios of personhood based on race, ethnicity, and gender, once seemingly fair from the Western worldview, are emerging as increasingly foul to many. Although race is a social construct, systemic efforts over generations have influenced strategies that enforce and sustain clear spatial and geoeconomic boundaries. These strategies vary greatly in their obviousness. Some are murky, opaque, and nevertheless insidious to unaware or unschooled onlookers. These geoeconomic boundaries affect longevity and health outcomes across almost all disease categories. The American Cancer Society’s Cancer Facts and Figures for African Americans 2019-2021 report stated that Black people collectively had the highest death rate and shortest survival of any racial/ethnic group for most cancers in the United States. What we had previously thought to be a gulf, was further exposed to be more like a chasm, by the unevenly distributed impact of the ongoing COVID-19 pandemic.

These differences are complex and multifactorial in etiology and involve social, economic, geographic, and cultural factors, all of which impact access to care. The field of oncology in recent years has revealed additional biologic variables contributing to the gaps in our understanding. ASH’s statement on diversity, equity, and inclusion was underscored by ASH President Dr. Stephanie Lee on June 9 of this year with an additional emphasis on readdressing and re-committing to the Society’s dedication to narrowing the chasm. The statement culminated with calls to action for members to get involved, including a suggestion to conduct research on health disparities and the social determinants of health.
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- TIM-3 antagonist antibody cobolimab
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- STING agonist GSK3745417
- Bifunctional TGF-ß/“trap”/anti–PD-L1 fusion protein bintrafusp alfa
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AXEL HOOS, MD, PhD
SVP, Therapeutic Area Head, Oncology R&D

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A Year to Remember

BY ALEXANDER GLAROS, MD (TWITTER @ALEXANDERGLAROS) AND KATHERINE REGLING, DO (TWITTER @KATEREGLING)

In ancient times, the Babylonians made commitments to their gods at the start of each year to return borrowed objects and pay their debts. The Romans made similar promises to the god Janus, for whom the month of January is named. And still today, with each new year, people around the world practice the tradition of “New Year Resolutions.” This year started off no differently; yet, the human race was quickly greeted by seemingly endless and relentless misfortunes. Rewind to January 2020 and the overwhelming sadness the world felt watching images of Australia on fire. In the United States, February brought the loss of a sports hero, role model, and top-notch “girl-dad,” Kobe Bryant. Then, headline after headline revealed how far our African American communities have to go in their fight against systemic racism. Every person has been affected differently by the various events of 2020, but the most universal and relentless battle all have had to face has been the global pandemic. Coronavirus, COVID-19, SARS-CoV-2 — whichever name you choose to call it — has impacted each and every one of us. First-responders, respiratory therapists, nurses, physicians, and so many others found the word “essential” redefined.

For hematologists, the early recognition of coagulation-related complications and their effect on overall outcomes, especially in critically ill patients, brought countless research opportunities aimed at better understanding the clinical sequelae and optimal management of COVID. Thus, it comes as no surprise that COVID-19 was a crucial component to this year’s content at the ASH annual meeting.

To kick things off, Dr. Amanda Payne, an epidemiologist from the Centers for Disease Control and Prevention, organized the Scientific Workshop on Infectious Disease and Coagulation, a one-of-a-kind session that covered the basic science, clinical translation, and public health impact of COVID-19 and how the pathophysiologic mechanisms may be able to aid in patient care. The workshop provided a forum for experts in a variety of fields to share information at the intersection of coagulation and infectious disease, highlighting the similarities and differences between COVID-19 and previously studied infections. “We have a history of infections, but the sheer volume of COVID-19 cases has allowed for robust, early data collection, and the ability to make the connection between infection, inflammation, and coagulation on a grand scale,” said moderator Dr. Shannon Meeks.

Over the course of the annual meeting, viewers were able to listen to more than 20 oral sessions (available on demand) pertaining to COVID-19, covering everything from the use of convalescent plasma therapy, the correlation of disease severity to ABO blood groups, and the use of anticoagulants for preventing thrombotic complications, among other topics. Dr. Filip Ionescu presented work on anticoagulant dosing and survival in hospitalized patients with COVID-19, and Dr. Rachel Rosovsky presented work relating to continuous venovenous hemofiltration (CVVH) filter clotting in COVID-19 infection (oral abstracts available on demand). As has always been the case, but is perhaps only now being widely recognized and publicized, the story of health in America is inextricably linked to the story of racial inequality. Dr. Ashima Singh presented work from the Medical College of Wisconsin on COVID-19, sickle cell disease (SCD), and the Black population. Their evidence indicated that SCD imposes additional risk for severe COVID-19 illness and hospitalization, but that no significant difference has existed in overall outcomes between Black patients, with or without SCD. In addition to this work, a highlight for many was the captivating presence of sessions surrounding race and various hematologic and oncologic diseases. A must-watch, on-demand talk is the Special Scientific Session on Race and Science.

Perhaps, the most anticipated discussion of ASH 2020 was the Fireside Chat with Dr. Anthony Fauci and ASH president Dr. Stephanie Lee (available on demand). Recognizing that although COVID-19 has some similarities to past outbreaks, its unprecedented impact on the entire world is vastly different. “We are living through something that is medically and public health historic,” said Dr. Fauci. The focal points of the discussion included everything from the development of immunity, viral mutations, and the much anticipated vaccine. He emphasized our ability to “crush COVID-19” with implementation of public health measures to keep the virus under control until we have an equitable distribution of the vaccine across the globe.

As this year closes, we must say a hopeful “see you next year” to our friends, colleagues, and newfound connections at ASH. We must remember to be thankful for the health and safety of our immediate and extended families. And we must continue to practice yearly traditions, even if it means finding new (socially distant), creative ways to do so. As for me, my 2021 resolutions will be broad: Adapt. Understand. Grow. Love. Inspire.

Dr. Regling and Dr. Glaros indicated no relevant conflicts of interest.
One Size to Fit All: The Quest for the “Universal Donor” in Hematology

BY ANAND PADMANABHAN, MD, PhD (TWITTER @ANANDPHERESISMD) | As a transfusionist, around Christmas and major holidays I pester my hospital blood bank staff to see if we have enough group “O” red blood cells (RBCs) to serve our patients. O cells lack “A” and “B” antigens on the RBC surface and serve as the “universal donor” for red cell transfusion. Given this, O blood group donors are in high demand with blood banks keen to have them donate blood products for patients in need. After attending the Presidential Symposium on Universal Donor Solutions in Hematology, I learned that the concept of obtaining “universal” donors is very much an area of active research investigation in all of hematology, and a highly relevant and fast-evolving topic.

In many areas of hematology, life-saving critical treatments like the one highlighted above depend on removing blood cells or their precursors from one person and then reinfusing them back into a patient. Infusion of unaltered products can carry risks with serious, sometimes fatal consequences. Manipulating products to make them acceptable for infusion can be expensive (running into the hundreds of thousands of dollars) due to complex and tedious manipulations that need to be performed to make the product fit for use. Thus, achieving the holy grail of designing the “universal donor” will likely have a profound impact on the practice of hematology for both malignant and nonmalignant diseases and will make therapies available to more patients than we are currently able to treat. In this exciting session chaired by ASH President Dr. Stephanie Lee, three speakers covered broad areas of hematology including cellular immunotherapy, hematopoietic cell transplantation, and RBCs/platelet production for transfusion.

Recent advances in the area of cellular immunotherapy have been staggering, beginning with the U.S. Food and Drug Administration approval of the first chimeric antigen receptor T-cell treatment in 2017, which was followed by multiple additional approvals and an expanding list of cellular immunotherapies undergoing trials. As an apheresis practitioner, I see firsthand the challenges of obtaining cells for manipulation and downstream processing. This often involves subjecting sick patients to a several-hour procedure (apheresis) to obtain enough cells to be able to expand and manipulate them ex vivo. Because each blood product is produced from a single patient, there is tremendous variability in the types of immune cells that are harvested and inconsistency in their ability to control the tumor after infusion. There are also logistical challenges and high costs associated with manufacturing new products for every treatment. In this context, Dr. Gay Crooks discussed a wide range of highly innovative approaches to cellular immunotherapy, including gene editing and stem cell engineering; these efforts are focused on the next phase in this fast-evolving field: the production of universal, off-the-shelf cellular immunotherapies with consistent potency that will be rapidly available and effective for all patients. Off-the-shelf products also provide other key potential advantages as patients are often too sick with fast-progressing diseases to undergo apheresis procedures or wait the weeks it takes to generate the immunotherapy product. I really enjoyed this fast-paced talk that, to me, resembled in many ways an engaging science-fiction story!

Allogeneic hematopoietic stem cell transplantation (HSCT) is a life-saving treatment modality for patients with many serious malignant and nonmalignant hematologic conditions. Finding an appropriately compatible donor for the HSCT graft can be a challenge, especially for patients belonging to ethnic minority groups as demonstrated in multiple studies. Dr. Bronwen Shaw from the Medical College of Wisconsin provided a great perspective on this problem and discussed many recent innovations that have significantly expanded our ability to identify a donor for every patient requiring allogeneic HSCT. The speaker delved into details of a multipronged approach to address this issue. After attending the talk, I realized that advances in graft-versus-host disease prophylaxis, novel pre-transplant conditioning approaches, enhancements in tissue typing (HLA) technologies, and increases in donor availability help address a number of barriers to access for this therapy. It was an eye opener to appreciate the complexity of systems in place when attempting to find a donor for every patient in need of one.

Dr. Stella Chou from the University of Pennsylvania discussed the progress and challenges of generating induced pluripotent stem cell (iPSC)-derived universal platelet and red cell products. As a platelet researcher and a transfusionist, I was glued to the screen as Dr. Chou described the progress made in our ability to differentiate these iPSCs to make viable functional platelets and RBCs. How amazing would it be if one could make RBCs lacking antigens to which a patient with sickle cell disease has antibodies, or being able to make “designer” platelets lacking certain antigens that are normally hard to obtain, or unique manufactured red cells/platelets that one could use as reagents in diagnostic testing? Dr. Chou’s talk touched on these interesting issues and more. She also provided a great update on the state of the technology used to manufacture clinically relevant numbers of cells while also maintaining the same functionality that we would expect in a blood donor-derived product so that these products are efficacious. All-in-all, this was a fantastic symposium that I think predicts where hematology will be in the next decade!

Dr. Padmanabhan indicated no relevant conflicts of interest.

Anand Padmanabhan, MBBS, PhD
Senior Associate Consultant, Associate Professor, Mayo Clinic, Rochester, MN

“It was an eye opener to appreciate the complexity of systems in place when attempting to find a donor for every patient in need of one.” — Dr. Anand Padmanabhan

Dr. Shaw presents her talk “A Stem Cell Donor for Every Patient.”
For patients with **HIGH-RISK MDS**

**ISN’T IT TIME FOR TREATMENT INNOVATIONS?**

Newly diagnosed patients with higher-risk myelodysplastic syndromes (HR-MDS) face poor outcomes

- ~40% will transform to AML
- 12.4 months mOS in a real-world study

A significant unmet need for the management of HR-MDS still exists

---

*Observed in adult patients with HR-MDS.†Results are from an observational study that included 1,101 consecutive patients with higher-risk MDS (IPSS intermediate-2/high) and low-blast-count AML (21%-30% blasts) in Ontario, Canada from June 1, 2010 to March 2, 2016.††AML=acute myeloid leukemia, HR-MDS=higher-risk myelodysplastic syndromes, IPSS=international prognostic scoring system, MDS=myelodysplastic syndromes, mOS=median overall survival.


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Over the past three decades, the care of patients with hemophilia has evolved from sole reliance on plasma derived therapies to the development of non-factor products and the promise of gene therapy. Though plasma derived therapies held great promise, they also carried enormous consequences. And no one knows this better than author and activist Dr. Robert Massie, who was born with severe hemophilia and acquired HIV and hepatitis C through factor therapy. In the Blood and Beyond session “Medical Mistakes and Miracles: Surviving Hemophilia, HIV and Hepatitis C” (available on demand). Dr. Massie presents a compelling story of medical error ultimately ending in redemption. From missing out on Halloween due to a joint bleed, calling for senate hearings on plasma factor products, and undergoing the liver transplant that cured him, Dr. Massie weaves a touching tale, infused with humor, hope, and inspiration. Transfusion-transmitted diseases created an exigent push for new technologies, and factor replacement therapy now is incredibly safe.

Yet challenges in the treatment of hemophilia remain, and these challenges led to the development of non-factor products such as emicizumab, a bispecific antibody that acts as a FVIII mimic. Emicizumab has revolutionized the care of patients with FVIII inhibitors but its role in the treatment of patients without inhibitors is not without controversy. Dr. Guy Young and Dr. Robert Sidonio debate the role of emicizumab in the Spotlight Session “Emicizumab’s Impact on the Landscape of Hemophilia A Treatment: Two Artists Debate the View” (available on demand). Although the topic is blood, thankfully none is shed. Whether you are a factor fanatic or an emicizumab extremist, this is a lively discussion, one that touches on use in previously untreated patients; concomitant factor VIII and emicizumab; the role of inhibitor tolerance induction; periprocedural management; and use in non-severe, older, and highly active patients. Even more exciting than nonfactor products, the dream of gene therapy for hemophilia is finally becoming a reality. Catch the on-demand recording of the Late Breaking Abstract session where Dr. Steven Pipe presents phase III data on the uniQure Hemophilia B program, the largest hemophilia gene therapy cohort to date, demonstrating achievement of near-normal levels of FIX, despite 42 percent of patients entering the trial with pre-existing antibodies. Patients were able to discontinue prophylaxis, with bleeding largely abolished in the 26-week follow-up, and with a similar safety profile to that seen in earlier phases.

I think we can all agree that those results are amazing. But if you’re looking for more debate, look no further than the Education Program session “What Hematologists Need to Know About Giving and Stopping Aspirin” (available on demand). For such a tiny little pill, aspirin sure does incite a lot of strong opinions. For years, many older adults lived by “an aspirin a day keeps the SCDs* away” with pre-existing antibodies. Patients were able to discontinue prophylaxis, with bleeding largely abolished in the 26-week follow-up, and with a similar safety profile to that seen in earlier phases. Dr. Erin Michos discusses patient selection for those who may benefit from daily aspirin, the factors that weigh into this decision, and how to engage in clinician-patient risk discussion. For primary prevention, the overall risk of cardiac events is quite low and bleeding risk must be considered. The best advice on aspirin in healthy people? “Take one aspirin a day. Take it out for a jog, take it to the gym, then for a bike ride.” Dr. Geoffrey Barnes discusses the hemostasis nightmare of dual antithrombotic and antiplatelet therapy, clearly breaking down a complicated topic. With huge numbers of patients affected by atrial fibrillation, where anticoagulation is recommended, and by coronary artery disease, where antiplatelet is indicated, a lack of data means that things could quickly turn into a bloody mess! As Dr. Barnes so eloquently states “Sometimes more is more. Sometimes less is more. We review when to use more meds and when to use fewer!” Finally, although we typically think of aspirin with regard to arterial events, Dr. David Garcia considers whether “an aspirin a day keeps the SCDs away” in discussing the possible role of antiplatelet therapy in preventing both primary and secondary venous thrombosis. Although there are data that aspirin has an effect in primary prevention, it should only be rarely used in secondary prevention. Further questions remain with regard to comparative efficacy with anticoagulation and the extent that bleeding risk is decreased.

Although unlikely to provide as much benefit as aspirin, it turns out that an apple a day (or at least how it affects your gut microbiome) may also impact your thrombosis risk. These days, commensal microbiota are increasingly recognized to be involved in numerous disease states. Dr. Martin Kriegel presents the role of the microbiome in the scariest of non-benign hematologic conditions, antiphospholipid syndrome, in the Scientific Program session “Gut Microbiome and the Endothelium” (available on demand). Not to be outdone, Dr. Mark Kahn blows our minds by presenting a gut-brain (!) disease axis and its implications for vascular malformations and stroke. Lastly, Dr. Weifei Zhu discusses mechanistic links between a western diet, platelet hyperresponsiveness, and cardiovascular disease and how this contributes to stroke risk susceptibility. I suggest gathering some healthy snacks for that one.

Clearly what we put in our bodies is important,
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Running Behind, But Flying Ahead: Late-Breaking Abstracts Pushing Science Forward

BY AHMAR U. ZAI Di, MD, EDITOR (TWITTER @DRZSICKLECELL) | In 2020, we are all running behind. Research stalled or halted due to a deadly pandemic becomes just another reason on a long list that prevents us from getting our science finalized before it is shared. Fortunately, ASH provides a mechanism to those scientists whose meaningful research needs to be shared with the larger ASH community at the annual meeting, the Late-Breaking Abstracts Session. This year’s session was moderated by Drs. Christopher Flowers and Sioban Keel.

In the first abstract, Dr. Jyoti Nangalia raised a possibility of enabling preventive strategies in myeloproliferative neoplasms (MPNs). The research presented on behalf of her colleagues elegantly shows that childhood and in utero acquisition of JAK2 and DNMT3A mutations occur in MPNs. They described variable rates of clonal expansion as well as the observation that clonal evolution within clones is assisted by sequential driving mutation acquisition, which can cause briskness of growth. Preventive strategies may be possible by exploring rates of expansion as determined by onset to diagnosis and mutation rates.

Dr. Charlotte Bradbury “lifted-off” with the second late-breaking abstract, which discussed the FLIGHT Trial. In this multicenter, open-label, randomized controlled trial (RCT), the researchers tested the hypothesis that mycophenolate mofetil (MMF) combined with corticosteroids is a more effective treatment pathway for first-line immune thrombocytopenia (ITP) than corticosteroids alone, which is standard of care. This is the first RCT using MMF to treat ITP that demonstrated good efficacy and tolerability, despite the inclusion of approximately 40 percent of patients older than 70 years. As such, the team proposed that MMF may be considered as an effective and well-tolerated firstline therapy alongside a short course of steroids. Acute leukemias of ambiguous lineage (ALAL), including those that express combinations of myeloid, T-lineage and stem cell markers, have remained perplexing in their diagnosis and management. In the third late-breaking abstract, Dr. Lindsey Montelifii described work to define the genomic basis of these leukemias. The data presented highlighted the influence of transcriptional and genomic analysis and of identifying the biological processes among different disease entities. This work has integrated a group of ALALs defined by enhancer hijacking of BCL11B. This new subtype of ALALs composed of multiple diagnostic entities within immunophenotyping includes both mixed phenotype acute leukemia-positive and negative leukemias.

In the fourth abstract, Dr. Andreas Hochhaus described the use of a novel drug, asciminib, for chronic myeloid leukemia (CML), specifically in patients with resistance and intolerance to at least two tyrosine kinase inhibitors (TKIs) in the ASCEMBL study. Because BCR-ABL remains the key driver of CML even in patients beyond second-line, and asciminib is a specific BCR-ABL inhibitor that has shown a favorable benefit risk profile in this patient population, asciminib is a first-in-class STAMP (Specifically Targeting the ABL Myristoyl Pocket) inhibitor with a new mechanism of action that is different from approved TKIs that bind to the ATP site of the BCR-ABL1 oncprotein. ETNK1 is identified in about 13 percent of patients affected by atypical chronic myeloid leukemia (aCML), in 3 to 14 percent of chronic myelomonocytic leukemia, and in 20 percent of systemic mastocytosis patients with eosinophilia. In the presented work, the role of these mutations has explored by using cellular CRISPR/Cas9 and ETNK1 overexpression models as well as samples from patients with aCML. In this fifth late-breaking abstract, Dr. Diletta Fontana proposed a novel mechanism by which reduced activity of mutated ETNK1 leads to an increased mitochondrial activity through the suppression of succinate dehydrogenase, normalization of ROS production, and protection of DNA from ROS-mediated damages.

In the final abstract, Dr. Steven Pipe presented the first report of a phase III study in patients with hemophilia B, and the largest gene therapy trial cohort reported to date. Mean factor IX activity considerably increased to near normal levels at 26 weeks post-etranacogene dezaparvovec, meeting the first co-primary endpoint. Patients were able to discontinue prophylaxis. Bleeding was eradicated in most patients throughout the trial.

Please be sure to view the session on demand to catch up on some of this fresh science.

Ahmar U. Zaidi, MD
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Dr. Zaidi indicted no relevant conflicts of interest.

“In 2020, we are all running behind ... Fortunately, ASH provides a mechanism to those scientists whose meaningful research needs to be shared with the larger ASH community.”
— Dr. Ahmar Zaidi
Patients may need VTE prophylaxis in both the inpatient and outpatient setting.
The Chronicles of #ASH20

BY DANIELLE HAMMOND, MD (TWITTER @DANIELLEHAMMO20) | “This is the land of Narnia,’ said the Faun, ‘where we are now; all that lies between the lamp-post and the great castle of Cair Paravel on the eastern sea.” — C.S. Lewis, The Chronicles of Narnia: The Lion, the Witch, and the Wardrobe

The ASH annual meeting continues to have a surreal quality to me. Like Lucy, the first child to discover the fantastical land of Narnia accessed through the secret wardrobe in Professor Digory Kirk’s home, I return through my own portal, energized by newfound knowledge about the possibilities. It feels criminal to distill the 2020 annual meeting to the handful of efforts highlighted here, although as Aslan reminds us, “all shall be done, but it may be harder than you think.”

Myeloproliferative neoplasms (MPNs) were the clear belles of the ball this year. Beginning at the translational level, Dr. Christian Mariniacco and colleagues’ Plenary Scientific Session abstract elegantly demonstrated the role that STK11 loss, leading to mTOR upregulation and HIF1α stabilization, plays in the leukemic transformation of chronic Philadelphia-negative MPNs, opening up ripe avenues for investigational therapies. An example of “saving the best for last” was the late-breaking abstract presented by Dr. Jyoti Nangalia, who made the compelling case that somatic JAK2 V617F driver mutations, and even some DNMT3A mutations, are acquired in utero or childhood, decades before any disease manifestation. This suggests that additional inciting events, even if it’s simply the passage of time, are involved in the pathogenesis of MPNs. It also tantalizingly suggests that targeted intervention on higher-risk pre-leukemic states is viable. The most neglected child of the MPNs, myelofibrosis, finally received some therapeutic attention. Demonstrating that perhaps a genie can at least partially be put back in the bottle, phase II data with the use of imetelstat — a competitive inhibitor of the myristoyl pocket rather than the ATP binding site, to bosutinib in refractory cases of chronic-phase CML. Cautions, however, include the exclusion of patients with T315I resistance mutations and a signal of increased arterial occlusive events.

Few allograft-sparing strategies have yet been shown to change the natural history of myelodysplastic syndromes (MDS). Therefore, the practice of bone marrow transplantation for myelofibrosis, the “triple negative” cases, demonstrated preferential responses to imetelstat. Details of the upcoming phase III trial can be found online. Chronic myeloid leukemia (CML) is sometimes thought of as the Hodgkin lymphoma of the MPN world given the perception that clinical outcomes are generally so good that pursuing additional investigational therapies has diminishing returns. It was therefore refreshing to see the late-breaking abstract comparing the early experience with aszinib, an inhibitor of the myristoyl pocket rather than the ATP binding site, to bosutinib in refractory cases of chronic-phase CML. Cautions, however, include the exclusion of patients with T315I resistance mutations and a signal of increased arterial occlusive events.

Dr. Raphael Itzykson presents the abstract “Decitabine Versus Hydroxyurea for Advanced Proliferative CMML: Results of the Emsco Randomized Phase 3 Dacota Trial.”

...was it feels criminal to distill the 2020 annual meeting to the handful of efforts highlighted here, although as Aslan reminds us, “all shall be done, but it may be harder than you think.”

— Dr. Danielle Hammond
DISCOVER THE FIRST AND ONLY ERYTHROID MATURATION AGENT

FIND THE FIRST AND ONLY ERYTHROID MATURATION AGENT

for patients with ring sideroblasts who are failing an ESA and require ≥2 RBC units/8 weeks

REBLOZYL® is indicated for the treatment of anemia failing an erythropoiesis stimulating agent and requiring ≥2 RBC units/8 weeks in adult patients with very low- to intermediate-risk myelodysplastic syndromes with ring sideroblasts and thrombocytosis (MDS/MPN-RS-T).

REBLOZYL is not indicated for use as a substitute for RBC transfusions in patients who require immediate correction of anemia.

IMPORTANT SAFETY INFORMATION

WARNINGS AND PRECAUTIONS

Thrombosis/Thromboembolism

In adult patients with beta thalassemia, thromboembolic events (TEEs) were reported in 8/223 (3.6%) REBLOZYL-treated patients. TEEs included deep vein thrombosis, pulmonary embolus, portal vein thrombosis, and ischemic stroke. Patients with known risk factors for thromboembolism (spleenectomy or concomitant use of hormone replacement therapy) may be at a higher risk of thromboembolic conditions. Consider thromboprophylaxis in patients at increased risk of TEE. Monitor patients for signs and symptoms of thromboembolic events and institute treatment promptly.

Hypertension

Hypertension was reported in 10.7% (615/571) of REBLOZYL-treated patients. Across clinical studies, the incidence of Grade 3 to 4 hypertension ranged from 1.8% to 8.6%. In adult patients with MDS with normal baseline blood pressure, 26 (29.9%) patients developed SBP ≥130 mm Hg and 23 (16.4%) patients developed DBP ≥80 mm Hg. Monitor blood pressure prior to each administration. Manage new or exacerbations of preexisting hypertension using antihypertensive agents.

Embryo-Fetal Toxicity

REBLOZYL® may cause fetal harm when administered to a pregnant woman. REBLOZYL caused increased post-implantation loss, decreased litter size, and an increased incidence of skeletal variations in pregnant rat and rabbit studies. Advise pregnant women of the potential risk to a fetus. Advise females of reproductive potential to use effective contraception during treatment and for at least 3 months after the final dose.

ADVERSE REACTIONS

Grade ≥3 (≥2%) adverse reactions included fatigue, hypertension, syncope and musculoskeletal pain. A fatal adverse reaction occurred in 5 (2.1%) patients. The most common (≥10%) adverse reactions included fatigue, musculoskeletal pain, dizziness, diarrhea, nausea, hypersensitivity reactions, hypertension, headache, upper respiratory tract infection, bronchitis, and urinary tract infection.

LACTATION

It is not known whether REBLOZYL is excreted into human milk or absorbed systemically after ingestion by a nursing infant. REBLOZYL was detected in milk of lactating rats. When a drug is present in animal milk, it is likely that the drug will be present in human milk. Because many drugs are excreted in human milk, and because of the unknown effects of REBLOZYL in infants, a decision should be made whether to discontinue nursing or to discontinue treatment. Because of the potential for serious adverse reactions in the breastfed child, breastfeeding is not recommended during treatment and for 3 months after the last dose.

Please see the Brief Summary of full Prescribing Information for REBLOZYL on the following pages.

**REBLOZYL®** (luspatercept-aamt) for injection, for subcutaneous use

Initial U.S. Approval: 2019

The following is a Brief Summary; refer to full Prescribing Information for complete product information.

**1 INDICATIONS AND USAGE**

**1.2 Myelodysplastic Syndromes with Ring Sideroblasts or Myelodysplastic/myeloproliferative Neoplasm with Ring Sideroblasts and Thrombocytosis Associated Anemia**

**REBLOZYL** is indicated for the treatment of anemia failing an erythropoiesis stimulating agent and requiring 2 or more red blood cell units over 8 weeks in adult patients with very low to intermediate-risk myelodysplastic syndromes with ring sideroblasts (MDS-DRS) or with myelodysplastic/myeloproliferative neoplasm with ring sideroblasts and thrombocytosis (MDS/MPN-RS-T).

**1.3 Limitations Of Use**

**REBLOZYL** is not indicated for use as a substitute for RBC transfusions in patients who require immediate correction of anemia.

**2 DOSAGE AND ADMINISTRATION**

**2.2 Recommended Dosage for Myelodysplastic Syndromes with Ring Sideroblasts (MDS-DRS) or Myelodysplastic/myeloproliferative Neoplasm with Ring Sideroblasts and Thrombocytosis (MDS/MPN-RS-T) Associated Anemia**

The recommended starting dose of REBLOZYL is 1 mg/kg once every 3 weeks by subcutaneous injection for patients with anemia of MDS-DRS or MDS/MPN-RS-T. Prior to each REBLOZYL dose, review the patient’s hemoglobin and transfusion record. Titrate the dose based on responses according to Table 3. Increase treatment for adverse reaction as described in Table 4. Discontinue REBLOZYL if a patient does not experience a decrease in transfusion burden after 9 weeks of treatment (administration of 3 doses) at the maximum dose level or if unacceptable toxicity occurs at any time. If a planned administration of REBLOZYL is delayed or missed, administer REBLOZYL as soon as possible and continue dosing as prescribed, with at least 3 weeks between doses.

**Dose Modifications for Response**

Assess and review hemoglobin results prior to each administration of REBLOZYL. If an RBC transfusion occurs prior to dosing, use the pretransfusion hemoglobin for dose evaluation. If a patient is not RBC transfusion-free after at least 2 consecutive doses (6 weeks) at the 1 mg/kg starting dose, increase the REBLOZYL dose to 1.33 mg/kg (Table 3). If a patient is not RBC transfusion-free after at least 3 consecutive doses (9 weeks) at the 1.33 mg/kg dose level, increase the REBLOZYL dose to 1.75 mg/kg. Do not increase the dose more frequently than every 6 weeks (2 doses) or beyond the maximum dose of 1.75 mg/kg.

In the absence of transfusions, if hemoglobin increase is greater than 2 g/dL within 3 weeks or if the predose hemoglobin increase is equal to or exceed 11.5 g/dL, reduce the dose of REBLOZYL as described in Table 3. If, upon dose reduction, the patient loses response (i.e., requires a transfusion) or hemoglobin concentration drops by 1 g/dL or more in 3 weeks in the absence of transfusion, increase the dose by one dose level. Wait a minimum of 6 weeks between dose increases.

Dose modifications for response are provided in Table 3.

**Table 3: MDS-DRS and MDS/MPN-RS-T Associated Anemia - REBLOZYL Dose Titration for Response**

<table>
<thead>
<tr>
<th>Dose Modifications for Pre-dose Hemoglobin Levels or Rapid Hemoglobin Rise</th>
<th>REBLOZYL Dosing Recommendation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not RBC transfusion-free after at least 2 consecutive doses (6 weeks) at the 1 mg/kg starting dose</td>
<td><strong>Increase the dose to 1.33 mg/kg every 3 weeks</strong></td>
</tr>
<tr>
<td>Not RBC transfusion-free after at least 2 consecutive doses (6 weeks) at 1.33 mg/kg</td>
<td><strong>Increase the dose to 1.75 mg/kg every 3 weeks</strong></td>
</tr>
<tr>
<td>No reduction in RBC transfusion burden after at least 3 consecutive doses (9 weeks) at 1.75 mg/kg</td>
<td><strong>Discontinue treatment</strong></td>
</tr>
</tbody>
</table>

**Dose Modifications for Predose Hemoglobin Levels or Rapid Hemoglobin Rise**

<table>
<thead>
<tr>
<th>Predose hemoglobin greater than or equal to 11.5 g/dL in the absence of transfusions</th>
<th>Interrupt treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in hemoglobin greater than 2 g/dL within 3 weeks in the absence of transfusions and</td>
<td>Restart when the hemoglobin is no more than 11 g/dL</td>
</tr>
<tr>
<td>• current dose is 1.75 mg/kg</td>
<td><strong>Reduce dose to 1.33 mg/kg</strong></td>
</tr>
<tr>
<td>• current dose is 1.33 mg/kg</td>
<td><strong>Reduce dose to 1 mg/kg</strong></td>
</tr>
<tr>
<td>• current dose is 1 mg/kg</td>
<td><strong>Reduce dose to 0.8 mg/kg</strong></td>
</tr>
<tr>
<td>• current dose is 0.8 mg/kg</td>
<td><strong>Reduce dose to 0.6 mg/kg</strong></td>
</tr>
<tr>
<td>• current dose is 0.6 mg/kg</td>
<td><strong>Discontinue treatment</strong></td>
</tr>
</tbody>
</table>

* Do not increase the dose if the patient is experiencing an adverse reaction as described in Table 4.

**Dose Modifications for Toxicity**

For patients experiencing Grade 3 or higher adverse reactions, modify treatment as described in Table 4.

**Table 4: MDS-DRS and MDS/MPN-RS-T Associated Anemia - REBLOZYL Dosing Modifications for Adverse Reactions**

<table>
<thead>
<tr>
<th>Body System/Adverse Reaction</th>
<th>REBLOZYL (N=563)</th>
<th>Placebos (N=78)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Grades (%)</td>
<td>Grade 3 (%)</td>
</tr>
<tr>
<td>General disorders and administration site conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue a, b</td>
<td>63 (41)</td>
<td>11 (7)</td>
</tr>
<tr>
<td>Musculoskeletal and connective tissue disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Musculoskeletal pain</td>
<td>30 (20)</td>
<td>3 (2)</td>
</tr>
<tr>
<td>Nervous system disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dizziness/vertigo</td>
<td>28 (18)</td>
<td>1 (&lt;1)</td>
</tr>
<tr>
<td>Headache</td>
<td>21 (14)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Syncope / presyncope</td>
<td>8 (5)</td>
<td>5 (3)</td>
</tr>
<tr>
<td>Gastrointestinal disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nausea</td>
<td>25 (16)</td>
<td>1 (&lt;1)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>25 (16)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Respiratory, thoracic and mediastinal disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyspnea</td>
<td>20 (13)</td>
<td>2 (1)</td>
</tr>
<tr>
<td>Immune system disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypersensitivity reactions</td>
<td>15 (10)</td>
<td>1 (&lt;1)</td>
</tr>
<tr>
<td>Renal and urinary disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renal impairment</td>
<td>12 (8)</td>
<td>3 (2)</td>
</tr>
<tr>
<td>Cardiovascular disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tachycardia</td>
<td>12 (8)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Injury poisoning and procedural complications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injection site reactions</td>
<td>10 (7)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Infections and infestations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper respiratory tract infection</td>
<td>10 (7)</td>
<td>1 (&lt;1)</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>9 (6)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

* Grade 1 is mild, Grade 2 is moderate, Grade 3 is severe, and Grade 4 is life-threatening. ** Per Table 3 dose reductions above.

**4 CONTRAINDICATIONS**

**Non-use**

**5 WARNINGS AND PRECAUTIONS**

**5.1 Thrombosis/Thromboembolism**

In adult patients with beta thalassemia, thromboembolic events (TEE) were reported in 8/223 (3.6%) REBLOZYL-treated patients. Reported TEs included deep vein thrombosis, pulmonary embolus, and ischemic strokes. Patients with known risk factors for thromboembolism, e.g. splenectomy or concomitant use of hormone replacement therapy, may be at further increased risk of thromboembolic conditions. Consider thromboprophylaxis in patients with beta thalassemia at increased risk of TEE. Monitor patients receiving REBLOZYL for signs and symptoms of thromboembolic events and institute treatment promptly.

**5.2 Hypertension**

Hypertension was reported in 10.7% (81/757) of REBLOZYL-treated patients. Across clinical studies, the incidence of grade 3-4 hypertension ranges from 1.8% to 8.9%. In adult patients with beta thalassemia with normal baseline blood pressure, 13 (8.2%) patients developed systolic blood pressure (SBP) ≥130 mm Hg and 33 (16.6%) patients developed diastolic blood pressure (DBP) ≥80 mm Hg. In adult patients with MDS with normal baseline blood pressure, 26 (9.9%) patients developed SBP ≥130 mm Hg and 23 (16.4%) patients developed DBP ≥80 mm Hg. Monitor blood pressure prior to each administration. Manage new-onset hypertension or exacerbations of preexisting hypertension using anti-hypertensive agents.

**5.3 Embryo-Fetal Toxicity**

Based on findings from animal reproductive studies, REBLOZYL may cause fetal harm when administered to a pregnant woman. In animal reproductive studies, administration of luspatercept-aamt to pregnant rats and rabbits during organogenesis resulted in adverse developmental outcomes including increased embryo-fetal mortality, alterations to growth, and structural abnormalities at exposures based on area under the curve (AUC) above those occurring at the maximum recommended human dose (MRHD) of 1.75 mg/kg. Advise pregnant women of the potential risk to a fetus. Advise females of reproductive potential to use an effective method of contraception during treatment with REBLOZYL and for at least 3 months after the final dose [see Use in Specific Populations (8.1, 8.3)].
As with all therapeutic proteins, there is potential for immunogenicity. The detection of antibody formation is highly dependent on the sensitivity and specificity of the assay. Additionally, the observed incidence of antibody (including neutralizing antibody) positivity in an assay may be influenced by several factors including assay methodology, sample handling, timing of sample collection, concomitant medications, and underlying disease. For these reasons, comparison of the incidence of antibodies to luspatercept in the studies described below with the incidence of antibodies in other studies or to other products may be misleading.

6.2 Immunogenicity

In a repeat-dose toxicity study, juvenile rats were administered luspatercept-aamt subcutaneously at 1, 3, or 10 mg/kg once every 2 weeks from postnatal day 7 to 91. Hematologic malignancies (granulocytic leukemia, lymphocytic leukemia, malignant lymphoma) were observed at 10 mg/kg resulting in exposures (based on area under the curve [AUC]) approximately 4.4 times the maximum recommended human dose (MRHD) of 1.75 mg/kg. In a combined male and female fertility and early embryonic development study in rats, luspatercept-aamt was administered subcutaneously to animals at doses of 1 to 15 mg/kg. There were significant reductions in the average numbers of corpora lutea, implantations, and viable embryos at exposures (based on AUC) approximately 7-times the MRHD of 1.75 mg/kg. Adverse effects on fertility in female rats were reversible after a 14-week recovery period. No adverse effects were noted in male rats.

17 PATIENT COUNSELING INFORMATION

Discuss the following with patients prior to and during treatment with REBLOZYL.

8.1 Pregnancy

Based on findings in animal reproduction studies, REBLOZYL may cause fetal harm when administered to a pregnant woman. There are no data available on REBLOZYL use in pregnant women to inform a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. In animal reproduction studies, administration of luspatercept-aamt to pregnant rats and rabbits during the period of organogenesis resulted in adverse developmental outcomes including embryo-fetal mortality, alterations to growth, and structural abnormalities at exposures (based on area under the curve [AUC]) above those occurring at the maximum recommended human dose (MRHD) (see Data). Adverse pregnancy outcomes may cause fetal loss.

In a pre- and postnatal development study, pregnant rats were administered luspatercept-aamt subcutaneously at 3, 10, or 30 mg/kg once every 2 weeks during organogenesis and through weaning; gestation day 6 through postnatal day 20. At all dose levels lower F1 pup body weights were observed at exposures (based on AUC) approximately 3-times the MRHD of 1.75 mg/kg.

8.2 Lactation

Luspatercept-aamt was detected in milk of lactating rats. When a drug is present in animal milk, it is likely that the drug will be present in human milk. There are no data on the presence of REBLOZYL in human milk, the effects on the breastfed child, or the effects on milk production. Because of the potential for serious adverse reactions in the breastfed child, advise patients that breastfeeding is not recommended during treatment with REBLOZYL and for 3 months after the last dose.
ASH Research Collaborative COVID-19 Registry for Hematology: An Ongoing Effort to Gather Data to Better the Care of Patients With Hematologic Conditions Who Test Positive for COVID-19

In April of 2020, as the COVID-19 public health crisis exploded in our country, the ASH Research Collaborative (ASH RC) Data Hub set to work to develop a COVID-19 Registry. At first, the Registry captured data on patients who tested positive for COVID-19 and had been or were being treated for a hematologic malignancy.

In June, the Registry expanded to collect data on patients with COVID-19 who have or previously have been treated for nonmalignant hematologic conditions. As data are received, real-time observational data summaries are publicly reported on the ASH RC’s website for clinicians on the front lines of the pandemic.

The COVID-19 pandemic has affected hematologists and the way they practice significantly. Dr. Mikael Sekeres, part of the working group that developed the Registry, shared his experience. He mentioned that during the first wave of the pandemic, hematologists were deliberate about which clinical trials were kept open based on patients’ needs and the fact that their potential benefits outweighed the risks of COVID-19. As they implemented better processes and protections for patients and providers, several trials resumed full operations. “A silver lining to the pandemic, as we will be presenting in an abstract at the ASH annual meeting this year, is that our research coordinators have become more efficient since working from home and being able to conduct monitoring visits remotely,” he explained, “which we believe has translated into being able to open more clinical trials even faster than previously.”

Dr. Sekeres elaborated on these efforts saying, “COVID-19 is the health crisis of our time, and one that we suspected would affect patients with hematologic issues differently from people in the general population. We felt it was our duty to our patients, to other hematologists, and to ASH to be proactive in developing a registry to meet everyone’s needs in real time, as the pandemic crisis was unfolding.” Drs. Lisa Hicks and William Wood took the lead on these efforts and asked other experts, including Dr. Sekeres, to determine what information would best help hematologists care for their patients. Dr. Sekeres explained that from the beginning, the group of experts set as their guiding principle collecting the right information and asking the right questions. He said, “To my knowledge, this is the only registry also witnessed the resiliency of the hematologic community, which joined together with meaningful collaborations that led to the rapid development and implementation of observational studies, randomized trials, and evidence-based guidelines.”

— Dr. Deborah Siegal

"We also witnessed the resiliency of the hematologic community, which joined together with meaningful collaborations that led to the rapid development and implementation of observational studies, randomized trials, and evidence-based guidelines."
Supporting Hematology’s Future: The 2020 ASH Scholar Award

The ASH Scholar Award is the Society’s longest-standing award program and one of the most highly regarded. For almost three decades, ASH has supported hundreds of fellows and junior faculty in both basic and clinical/translational research by providing partial salary or other support during the critical period between completion of training and the establishment of one’s independent career. The awards, in the amount of $100,000 for fellows and $150,000 for junior faculty over a two- to three-year period, are made possible through grants from the corporate community, individual donors, foundations, and funds committed by the Society. (To learn more about the ASH Scholar Award program, please visit www.hematology.org/awards.)

Michalis Agathocleous, PhD
Dr. Agathocleous is an Assistant Professor at Children’s Medical Center Research Institute (CRI), UT Southwestern Medical Center (UTSW). He is originally from Cyprus, and received his BA and PhD degrees from the University of Cambridge, where he studied epigenetic retinal development with Professor Bill Harris. He was a research fellow at Gonville and Caius College, University of Cambridge, where he showed that glycolysis and oxidative phosphorylation change during retinal progenitor differentiation, and metabolism regulates progenitor function. He was an 1851 Research Fellow at CRI, with Professor Sean Morrison. Here he developed methods to measure the metabolome of rare cells isolated from tissues; showed that ascorbate levels are high in hematopoietic stem cells and decline with differentiation; and demonstrated that ascorbate depletion promotes stem cell function and myeloid leukemia development. In 2017, Dr. Agathocleous became a Cancer Prevention and Research Institute of Texas Scholar and joined CRI as an assistant professor. His lab focuses on metabolic regulation of hematopoiesis during leukemia initiation and infection. The ASH Scholar Award will fund his work to develop new metabolomics methods to enable the identification of the nutrients used by different hematopoietic cells and to trace their contribution to intracellular metabolites.

Hanny Al-Samkari, MD
Dr. Hanny Al-Samkari is an instructor in medicine at Harvard Medical School and clinical investigator in the Massachusetts General Hospital Division of Hematology. He received his medical degree from Washington University in St. Louis, completed his residency in internal medicine at the Hospital of the University of Pennsylvania (where he also served as Chief Medical Resident) and completed his fellowship in hematology and medical oncology at the Dana-Farber Cancer Institute–Massachusetts General Hospital combined program. His clinical and research interests are in hemostasis and thrombosis, with a focus on hereditary hemorrhagic telangiectasia, immune thrombocytopenia, hereditary pyruvate kinase deficiency, and novel indications for the thrombopoietin receptor agonists. He currently serves as principal investigator for several clinical trials in these areas. Dr. Al-Samkari is the Associate Director of the Massachusetts General Hospital Hereditary Hemorrhagic Telangiectasia Center of Excellence and has a dedicated weekly hereditary hemorrhagic telangiectasia (HHT) clinic. In recognition of his scholarly contributions to the management of HHT, he was named a member of the 2019 International Hereditary Hemorrhagic Telangiectasia Guidelines Committee. Dr. Al-Samkari is honored to have been selected for the ASH Scholar Award and will use this opportunity to further investigate the effectiveness and safety of antiangiogenic therapies to manage chronic bleeding and other complications of HHT.

David Bartlett, PhD
Dr. Bartlett is an assistant professor in the Duke Cancer Institute (DCI) where his research focuses on understanding the mechanisms by which exercise training can improve immune function in adults with cancer. In 2014, he obtained his PhD in immunity and infection, and postdoctoral training in Cancer Metabolism at the University of Birmingham in England. In 2016 he completed an EU Marie Curie Research Fellowship at Duke University investigating the effects of exercise training on relationships between immune function and disease state in older adults with chronic diseases. In collaboration with Drs. Danielle Brander, Brice Weinberg, and Andrea Sillinger from Duke Hematologic Malignancies, he has found that aerobic and functional fitness is associated with distinct immune cell characteristics and exosomal miRNA signatures in adults with chronic lymphocytic leukemia (CLL). For his ASH Scholar Award project, Dr. Bartlett will investigate the effects of 12 weeks of exercise training on immune function, microRNA interactions, and clinical markers in CLL. Dr. Bartlett is honored to be chosen for the ASH Scholar Award, which will provide crucial new insights into the role of exercise training on the immune system and health of adults with CLL.

Benjamin Barwick, PhD
Dr. Barwick is a postdoctoral fellow at Winship Cancer Institute of Emory University where he studies genomic and epigenomic alterations in multiple myeloma. He obtained a Bachelor of Science degree in engineering and a Master of Science degree in bioinformatics at Georgia Institute of Technology before completing his PhD studies in genetics and molecular biology at Emory University. During this time, Dr. Barwick gained extensive experience in computational biology and studied the epigenetic regulation of the adaptive immune system, which led to several impactful publications. As a postdoctoral fellow, he has helped to identify multiple myeloma translocations of the immunoglobulin lambda (IGL) light chain as a marker of poor outcome in multiple myeloma potentially due to immunomodulatory drug resistance. To this end, as part of his ASH Scholar Award, he is investigating how immunomodulatory drugs affect IGL-translocated myeloma through mechanistic studies of the IGL enhancer, which drives oncogene expression in this subtype of myeloma. His work is aided by the strong translational environment of Winship Cancer Institute and a group of outstanding clinical and basic science colleagues.

Wendy Béguelin, PhD
Dr. Wendy Béguelin is a basic and translational research scientist working in the field of lymphoma epigenetics. She obtained her degree in biology at the University of Buenos Aires, Argentina. During that period, she researched the molecular mechanisms of breast cancer and received extensive scientific training in the investigation of cell biology and signal transduction, with studies on gene regulation and transcription factor binding. As a postdoctoral scientist at Weill Cornell Medical College, under the supervision and mentorship of Dr. Ari Melnick, she has identified novel epigenetic and transcriptional mechanisms that contribute to B-cell differentiation and lymphomagenesis. She has studied the biological and transcriptional mechanisms of action of Polycomb proteins in germline center B cells and lymphomas. Dr. Béguelin is currently an Assistant Professor at Weill Cornell Medicine, New York. She is committed to a career in basic and translational cancer research. The ASH Junior Faculty Scholar Award will enable her to continue contributing to the field of epigenetic control of lymphomagenesis and making discoveries that can be translated from the diagnostic and therapeutic standpoints.

Theodore Braun, MD, PhD
Dr. Braun is an instructor at Oregon Health & Science University, specializing in the care of patients with myeloid malignancies. He completed undergraduate studies at Claremont McKenna College and earned his MD and PhD from OHSU. He completed his residency in internal medicine at the University of Washington Medical Center and returned to complete hematology and oncology fellowship training at OHSU. During his fellowship, he investigated the impact of mutation order on the behavior of acute myeloid leukemia.
Mary Rodes Gibson Memorial Award Recognizes Outstanding Trainee Abstract

Dr. Mehic is a PhD student in the Division of Hematology and Hemos- tology at the Medical University of Vienna. Upon receiving this award, Dr. Mehic shared the significance of the recognition. “Receiving the Mary Rodes Gibson Memorial Award in Hemostasis and Thrombosis was an exciting and significant event for me,” he said. “The award showed an appreciation for our research and validated the hard work that we had been putting into our project.” He also expressed that the award served as a boost to his motivation and helped solidify his desire to continue his research in this fascinating field. Dr. Mehic presented his abstract titled “Association of ABO Blood Group With Bleeding Severity in Patients With Bleeding of Unknown Cause,” (abstract 572) during oral session 322. Disorders of Coagulation or Fibrinolysis: Von Willebrand Disease and Bleeding.

All abstracts are available for on-demand viewing on the virtual meeting platform (annualmeeting.hematology.org), or as part of the Blood Supplement (ashpublications. org/blood/issue/136/Supplement1). Learn more about ASH award programs, including abstract achievement awards, at www.hematology.org/awards.

PRECISION MEDICINE

2020 Update on ASH Immunotherapies Initiatives

Immunotherapy as a field has generated novel immune-based strategies and revolutionized treatment options for malignant and nonmalignant hematologic diseases. The ASH Task Force on Immunotherapies has dedicated its recent efforts on improved access to clinical trials, fostering scientific exchange in the field of immunotherapy as it relates to hematology, and establishing strategic collaborations aimed at developing resources for management of adverse events resulting from the use of immunotherapies. One important project emerging from the task force that continued to gain ground in 2020 is the Summit on Immunotherapies for Hematologic Diseases, which is slated for early 2022.

The summit will focus on identifying and overcoming mechanisms of resistance to immunotherapies, improving the safety of these therapies, the application of immunotherapies to nonmalignant hematologic diseases, and enhancing manufacturing technologies to improve these therapies. A highly interactive program, the summit will feature didactic lectures, panel discussions, rapid-fire poster talks, and abstract presentations. Dr. Catherine Bollard, a member of the Task Force on Immunotherapies and the Summit on Immunotherapies Steering Committee, remarked about the direct relationship between the strength and rapid growth of immunotherapy and the future of the summit. “The future for the summit is strong,” she said, “as we focus to build and expand the program to ensure there is engagement by all stakeholders including those from academia, regulatory and industry.” This speaks to one of the chief goals of the summit: facilitating conversations and, hopefully, collaboration among scientists in different fields who might not normally interact.

COVID-19 has impacted seemingly every corner of medicine, and immunotherapies was no exception. And while the task force maintains its focus on immune-based therapies for patients with blood disorders, the connection has been inevitable. “With the development of cell therapies such as mesenchymal stromal cells, regulatory T cells, and antigen-specific T cells to control inflammatory disorders and infectious diseases (especially after bone marrow transplantation) there is an obvious link to extend the focus of this committee to COVID-19,” said Dr. Bollard. She noted that there are some cell-based therapies that are being utilized in current and forthcoming clinical trials for the treatment of SARS-CoV2 infection and/or COVID-19, as well as for the treatment of COVID-19-associated inflammatory sequelae such as multisystem inflammatory syndrome in children. The steering committee will be highly engaged in evaluating the impact of such therapies as the results of the clinical studies become available.

Another central strategic initiative is the ASH Workshop on Developing Biomarkers for CAR T Cells and BiTES® Toxicity and Efficacy. This interactive, invite-only one-day workshop was held virtually in October 2020 and concentrated efforts on the identification of biomarkers on toxicity and efficacy for chimeric antigen receptor T-cell (CAR-T) and other commercially approved immune effector cell (IEC)-mediated therapies. Roughly 50 investigators, representing academia, industry, regulatory bodies, and the National Institutes of Health (NIH) were convened in order to reach a consensus on which samples to collect (including timing) and what assays to use to identify novel biomarkers, and to develop plans for a national effort that would match a sample biobank and digital biobank with Cellular Immunotherapy Data Resource (CIDR) data.

Dr. Miguel Perales is one of the event’s co-organizers, along with Drs. Sophie Paceszyn, Marcelo Pasquini, and Steven Pavletic. He noted that while CAR-T and T-cell engagers represent a paradigm shift in the treatment of patients with certain advanced hematologic malignancies, and new U.S. Food and Drug Association (FDA) approvals are expected in the coming months, they are also associated with unique toxicities such as cytokine release syndrome (CRS) and IEC-associated neurotoxicity syndrome (ICANS). “Most clinical centers voluntarily report data on commercial CAR-Ts to the Center for International Blood and Marrow Transplant Research (CIBMTR) CIDR,” he said. “However, no similar systematic effort exists when it comes to collecting samples from patients that could be used to identify biomarkers of safety and/or efficacy.” The organizers believe that addressing this unmet need can only be achieved through close collaboration and partnership from a broad collection of stakeholders, including industry partners, the FDA, NIH, CIBMTR, and ongoing support and leadership from ASH. “To really accelerate discoveries in the field and improve patient outcomes, we need to align all key stakeholders and develop a multicenter effort to build a sample biobank and digital biobank,” said Dr. Perales.

The workshop’s co-organizers are pleased that through this workshop, several action items were developed, and a resulting commentary will soon be submitted for publication in Blood Advances, outlining a proposed roadmap. They also wish to note that the event was truly a team effort in every way, and they express their gratitude to ASH staff members Charles Clayton, Judy Keen, Alice Kuanab, and Gabriella Ryan.

To learn more the programs and activities supporting this research priority, visit www.hematology.org/research/precision-medicine-initiative/improving-use-of-immunotherapies or email ashprecisionmedicine@hematology.org.

Be on the lookout for a new Blood review series covering the conceptual, laboratory, and clinical progress in applying novel immunotherapies to nonmalignant hematologic diseases, and the hematologic complications of novel immunotherapies. The series is edited by Drs. Cynthia E. Dunbar and Rodrigo Calado.
Amgen is contributing to the advancement of cancer treatment with the investigational BiTE® immuno-oncology platform. This versatile technology is engineered to deliver off-the-shelf therapies that direct patients' own T cells to target tumor-associated antigens, activating their cytotoxic potential. Currently being investigated in multiple tumor types and extended half-life therapies, BiTE® technology is designed to close the space between patients' T cells and tumors.

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B-cell maturation antigen; CD, cluster of differentiation; CLDN18.2, Claudin-18 isoform 2; DLL3, delta-like protein 3; FLT3, FMS-like tyrosine kinase 3; MUC17, mucin 17; PSMA, prostate-specific membrane antigen.
He demonstrated that founding mutations in the transcription factor CEBPA reprogram the epigenetic landscape changing the transcriptional manifestation of second hit mutations. For his Scholar Award, Dr. Braun will continue this line of investigation, defining the roles of key transcription factors in driving oncogenic changes to the epigenetic landscape, with the ultimate goal of identifying new therapeutic targets. Dr. Braun is honored to have been chosen to receive an ASH Scholar Award, which will provide support for his research group as he transitions to independence.

Stephen Chung, MD

Dr. Chung is an assistant professor at UTSW, where he specializes in the care of patients with myelodysplastic syndromes. He earned his medical degree at Washington University School of Medicine and completed a residency in internal medicine at Washington University School of Medicine, followed by a medical oncology fellowship at Memorial Sloan Kettering Cancer Center, where he remained as faculty on the leukemia service for six years before starting his lab at UTSW in 2018. As a postdoctoral fellow with Christopher Park and Ross Levine, Dr. Chung’s work led to the identification of the cell of origin for hairy cell leukemia, as well as the discovery of CD99 as a disease stem cell marker and therapeutic target in myeloid malignancies. He is grateful to have previously received an ASH Fellow Scholar Award, which provided critical support for studies that now form the basis of his Junior Faculty Scholar Award, which will support studies to understand the mechanisms by which CD99 promotes leukemia stem cell function. His work has identified a role for CD99 in the regulation of translation, and his project will explore how this can be used to develop novel therapies targeting LSCs.

Shannon Elf, PhD

Dr. Elf completed her PhD at Emory University in the Molecular & Systems Pharmacology Program under the supervision of Jing Chen. Her doctoral thesis focused on identifying novel targets for the treatment of leukemia, with a particular focus on leukemogenesis. She continued her research in Dr. Ariana Gaiti’s laboratory at Harvard Medical School, where she studied red blood cell membrane transport properties in sickle cell disease (SCD) and how this contributes to complications of the disease. In 2015, she joined the laboratory of Dr. Gregory Kato at the Vascular Medicine Institute at the University of Pittsburgh as a postdoctoral research associate. Her research work in Dr. Gregory Kato’s group focused on elucidating the molecular pathways of heme entry and response to heme-induced expression of placentinal growth factor (PIGF) in bone marrow cells, and how PIGF mediates pathophysiology of cardiopulmonary complications in SCD. Dr. Ghotosho is currently a research associate in the laboratory of Dr. Punam Malik at the Division of Experimental Hematology and Cancer Biology, Cincinnati Children’s Hospital Medical Center. Currently, she is investigating the role of macrophages in the dysregulated immune system response and mechanisms underlying cardiac fibrosis in SCD. Dr. Ghotosho is committed to a career in basic/translational cardiopulmonary and inflammatory complications in hemolytic disorders. The ASH Scholar Award provides critical support to receive extended training needed to become an independent investigator, with the potential for identifying unique targets for biologic or pharmacologic therapy for SCD.

Federico Gaiti, PhD

Dr. Gaiti is a postdoctoral fellow at Weill Cornell Medicine and New York Genome Center in New York, where he studies the epigenetic determinants of cancer evolution using novel single-cell experimental and computational approaches. He obtained his PhD in evolutionary biology and genomics from the University of Queensland (Australia), where he focused on understanding the evolutionary origin of two major players in human gene regulation: long noncoding RNAs and chromatin marks. Through these studies, he became fascinated with the efforts to decipher how a normal cell can become tumoral by the accumulation of genetic and non-genetic events. This motivated him to pursue a career in biomedical research, to specifically understand the underpinnings of evolutionary plasticity of cancer. After receiving his PhD, he therefore joined Dr. Dan Landau’s lab at Weill Cornell Medicine and New York Genome Center. As a postdoctoral scientist, he focused on the development of new methods and conceptual frameworks to integrate DNA methylation, histone modifications, genomics, and transcriptomics in the study of blood cancer development, unraveling intratumoral epigenetic heterogeneity as a major driver of leukemia evolution. Dr. Gaiti is committed to a career in basic/translational cancer research, making discoveries that would offer improved therapeutic options to directly address cancer evolutionary plasticity. The Scholar Award, together with an interdisciplinary mentorship team with expertise in cancer genomics, epigenomics, and lymphoma biology (Drs. Dan Landau, Omar Abdel-Wahab, and Ari Melnick), will enable him to make crucial new insights into the epigenetic mechanisms that allow leukemic cells to evolve and transform to aggressive lymphoma, ultimately informing the design of epigenetic therapy clinical trials.

Oluwabukola Ghotosho, PhD

Dr. Ghotosho received her PhD in physiology from the University of Cambridge, United Kingdom, where she studied red blood cell membrane transport properties in sickle cell disease (SCD) and how this contributes to complications of the disease. In 2015, she joined the laboratory of Dr. Gregory Kato at the Vascular Medicine Institute at the University of Pittsburgh as a postdoctoral research associate. Her research work in Dr. Gregory Kato’s group focused on elucidating the molecular pathways of heme entry and response to heme-induced expression of placentinal growth factor (PIGF) in bone marrow cells, and how PIGF mediates pathophysiology of cardiopulmonary complications in SCD. Dr. Ghotosho is currently a research associate in the laboratory of Dr. Punam Malik at the Division of Experimental Hematology and Cancer Biology, Cincinnati Children’s Hospital Medical Center. Currently, she is investigating the role of macrophages in the dysregulated immune system response and mechanisms underlying cardiac fibrosis in SCD. Dr. Ghotosho is committed to a career in basic/translational cardiopulmonary and inflammatory complications in hemolytic disorders. The ASH Scholar Award provides critical support to receive extended training needed to become an independent investigator, with the potential for identifying unique targets for biologic or pharmacologic therapy for SCD.

Annamaria Guilla, MD

Dr. Guilla is a postdoctoral fellow at Dana-Farber Cancer Institute (DFCI) in Boston. She earned her MD in 2011 from the Magna Graecia University of Catanzaro in Italy and completed a clinical/research fellowship in Medical Oncology at the same University. During her fellowship, she gained expertise in molecular biology and experimental therapeutics of myeloma. She primarily focused on the role of noncoding RNA and epigenetic factors in myeloma, aiming at the identification of novel therapeutic
Robert Lee, PhD

Dr. Lee is a research assistant professor at the University of North Carolina at Chapel Hill. Under the guidance of Dr. Guillermo Vazquez, he completed his Ph.D. at the University of Toledo, where he studied macrophage signaling in atherosclerosis. In 2015 he joined the lab of Dr. Wolfgang Bergmeier (UNC-CH) as a postdoctoral fellow. During his five years as a postdoc, Dr. Lee’s work encompassed various aspects of platelet function, including platelet signaling during development and inflammatory hemostasis, signaling pathways regulating integrin activation, and collaborative projects investigating platelet function—enhancing nanoparticles. Recently, he demonstrated the detrimental impact of endogenous dysfunctional platelets on the function of healthy transfused platelets in mouse models of platelet disorders. His current project will expand on these findings to investigate the utility of platelet transfusion in the setting of antiplatelet therapy (APT), and whether thrombocytopenia exacerbates bleeding risk with APT. His goal is to increase the translational impact of his work, including utilizing a new model of human platelet transfusion into immunocompromised recipient mice developed in the Bergmeier lab. The Scholar Award provides critical support and resources to establish an independent career focused on mechanistic aspects of platelet transfusion.

Hojun Li, MD, PhD

Dr. Li is an instructor in pediatric hematology/oncology at the Dana-Farber/Boston Children’s Cancer and Blood Disorders Center, and he recently started an independent laboratory as the Charles W. and Jennifer C. Johnson Clinical Investigator at the Koch Institute for Integrative Cancer Research at the Massachusetts Institute of Technology. He obtained a bachelor’s degree in biochemistry from the University of Maryland and then completed his MD/PhD training at the University of Pennsylvania. With his thesis advisor, Dr. Katherine High, he established the field of in vivo genome editing. He then completed his pediatric residency at Boston Children’s Hospital, followed by hematology/oncology fellowship at Dana-Farber Cancer Institute. He performed postdoctoral research with Dr. Harvey Lodish at the Whitehead Institute for Biomedical Research, where he identified the effect of glucocorticoids on erythropoietic development using single-cell RNA sequencing, and demonstrated that the uncoupling rate of lineage differentiation from cell cycle progression may be a key therapeutic paradigm in treating bone marrow failure syndromes. His independent laboratory is now working on identifying the erythropoietic molecular gene targets activated by glucocorticoid receptor signaling, with a goal of developing novel therapeutic targets to mimic glucocorticoid signaling in red cell development, while avoiding systemic glucocorticoid toxicities.

Stephanie Luff, PhD

Dr. Luff is a postdoctoral fellow at the Icahn School of Medicine at Mount Sinai under the direction of Dr. Christopher Sturgeon, where she studies the molecular regulators of embryonic hematopoiesis. Prior to this, she obtained her Ph.D. at the University of Delaware, supervised by Dr. Eleftherios T. Papoutsakis, examining the roles of p53 and AP-1 during megakaryopoiesis. Following her degree, she joined the Sturgeon laboratory, previously located at the Washington University in St. Louis, and continued her passion for hematology using the directed differentiation of human pluripotent stem cells (hPSCs) to model embryonic hematopoietic development. During her fellowship thus far, she has identified a novel precursor that gives rise to a retinoic acid-dependent hematopoietic program, mimicking what is observed within an early embryo. This discovery is a crucial step toward specifying hematopoietic stem cells from hPSCs. Her ASH Scholar Award further supports the progress toward this goal in that Dr. Luff aims to identify signaling regulators critical for the specification of hematopoietic progenitors from this novel precursor.

Kellie Machlus, PhD

Dr. Machlus is an assistant professor of medicine at Harvard Medical School and Brigham and Women’s Hospital. Dr. Machlus’ laboratory focuses on understanding the signals that control megakaryocyte differentiation and maturation under physiological and pathological states. Dr. Machlus completed her PhD in 2006 with Dr. Alisa Wolberg at the University of North Carolina at Chapel Hill, where she investigated relationships between procoagulant plasma proteins, platelet activity, and thrombus formation. Dr. Machlus then did her postdoctoral fellowship with Dr. Joseph Italiano at Harvard; the major focus of her research was to identify cell biological pathways leading to platelet formation from megakaryocytes. Currently, Dr. Machlus’ laboratory is interested in revealing how different disease states alter megakaryocytes, and how these changes are ultimately manifested in their platelet progeny. Specifically, the Machlus lab investigates how mediators of inflammation, such as the cytokine CCL5 and extracellular vesicles, alter hematopoietic stem cell differentiation, megakaryocyte maturation, and ultimately, platelet production and phenotype. These studies can lead to novel approaches to treat thrombocytopenia through manipulation of platelet number and function by targeting their precursor cells, megakaryocytes.

Rossella Marullo, MD, PhD

Dr. Marullo is a physician-scientist investigating how perturbations in mRNA transcription, processing and export promote cancer cells ability to tolerate oncogenic stress. She is instructor in medicine in the Division of Hematology and Medical Oncology at Weill Cornell Medicine in New York. Dr. Marullo received her Medical Degree and Clinical Oncology training at the University of Messina, Italy. As an oncologist, Dr. Marullo developed an interest in translational research and enrolled into a PhD program during which she gained expertise in the field of genomic instability under the mentorship of Dr. Paul D’Oetsch at Emory University in Atlanta. Dr. Marullo joined Weill Cornell Medicine as a postdoctoral fellow in the laboratory of Dr. Leandro Cerchietti where she investigated mechanisms of genotoxic stress tolerance in diffuse large B-cell lymphoma. A major finding of her postdoctoral research is the role played by HSF-BCL6-TOX axis in establishing a stress-tolerant transcriptional phenotype in normal B cells and cancer cells. With the support of the ASH Scholar Award, she will investigate whether and how TOX-mediated transcriptional regulation prevents B-cell lymphomagenesis. Dr. Marullo is honored to receive the ASH Scholar Award to support this research, which she hopes will lead to the identification of potential therapeutic targets for DLBCLs harboring TOX mutations.
Francesco Maura, MD
Dr. Maura is an assistant attending and Co-Principal Investigator in Ora Landgren’s lab at Memorial Sloan Kettering Cancer Center in New York. Their work focuses on the genomic and phenotypic determinants of resistance to immunotherapies in multiple myeloma, the landscape and chronological reconstruction of driver events in multiple myeloma and its precursor disease, and deciphering the impact of melphalan on therapy-related myeloid neoplasms in multiple myeloma.

Patrick McGann, MD
Patrick T. McGann, MD, MS, is an associate professor of pediatrics at Cincinnati Children’s Hospital Medical Center and the University of Cincinnati College of Medicine. He obtained his MD from Tufts University School of Medicine and completed his pediatrics residency at Massachusetts General Hospital for Children, and his pediatric hematology/oncology fellowship at St. Jude Children’s Research Hospital and Baylor College of Medicine. In addition to his clinical training, he is completing a PhD in Molecular, Cellular, and Biochemical Pharmacology from the University of Wisconsin, anticipated in 2021. His research is focused on improving the diagnosis and outcomes for children with sickle cell disease in the United States and across the world. Primarily, he has focused on optimizing dosing of hydroxyurea through precision medicine. His ASH Scholar Award will focus on expanding what has been learned in the pediatric population to the adult sickle cell population in order to optimize benefits and minimize toxicity of hydroxyurea through personalized, PK-guided dosing approaches. In addition to the ASH Scholar Award, Dr. McGann’s research has been supported through a K23 Award from the National Heart, Lung, and Blood Institute and a Sickle Cell/Advancing Cures Award from the Doris Duke Charitable Foundation.

Anjali Mishra, PhD
Dr. Mishra’s focus is to study critical oncogenic pathways operational in the blood cancers of T- and natural killer (NK)–cell origin. The lab projects are focused on understanding the relationship between cytokine signaling in normal and malignant hematopoiesis. In addition to discovering the key determinant of T- and NK-cell leukemia/lymphoma pathogenesis, the work of Dr. Mishra’s lab investigates identifying new targets for blood cancer prevention and treatment.

Rakhi Naik, MD
Dr. Naik graduated from Duke University with a degree in biomedical and electrical engineering and received her MD from Cornell Medical School. She also holds a master’s degree in health sciences from the Johns Hopkins Bloomberg School of Public Health. Dr. Naik has been at Johns Hopkins throughout her medical training, serving as house staff, hematology fellow, and Chief Resident prior to being recruited to faculty in the Division of Hematology. Dr. Naik additionally serves as the associate director for the Hematology Fellowship Track at Johns Hopkins and is a member of the ASH Committee on Training, through which she leads education initiatives to promote retention in non-malignant hematology. Dr. Naik’s primary research involves the study of sickle hemoglobin disorders, with the goal of informing counseling, screening, and treatment guidelines. Dr. Naik has previously successfully received K award funding to study the genetic epidemiology of sickle cell trait. Her studies have defined sickle cell trait as an overlooked risk factor for chronic and end-stage renal disease in Black Americans. With the support of the ASH Scholar Award, Dr. Naik will extend her studies to identify modifying factors and potential treatment options for individuals with sickle cell trait-related nephropathy.

Satish Nandakumar, PhD
Dr. Nandakumar is a postdoctoral fellow at the Boston Children’s Hospital, where he uses insights from genomewide association studies (GWAS) to investigate normal and disease hematopoiesis. He completed his PhD at the St. Jude Children’s Research Hospital in Memphis under the mentorship of Dr. Derek Persons. During his graduate work, he studied how dysregulation of transcription factor GATA2 altered the lineage differentiation and leukemia initiation. During his postdoctoral training in the laboratory of Dr. Vijaip Sankaran, he worked on the problem of connecting genetic variants from GWAS to hematopoietic function. Dr. Nandakumar has developed experimental approaches to follow-up GWAS variants on blood cell traits and identified enhancer elements and target genes critical for hematopoiesis. For his ASH Scholar Award project, Dr. Nandakumar will study the mechanisms underlying germline predisposition to myeloproliferative neoplasms (MPNs) and chronic hematopoiesis of indeterminate potential (CHIP). He will leverage GWAS on MPN and CHIP to prioritize genetic variants and study their impact on hematopoietic stem cell (HSC) function. He will also examine the interactions between germline variants and somatic driver mutations in these disorders. The ASH Scholar Award will enable Dr. Nandakumar to make crucial insights into the genetic basis of how blood cancers are acquired.

Karolyn Oetjen, MD, PhD
Dr. Karolyn Oetjen is an instructor in medicine at Washington University in St. Louis. She received her bachelor of science degree from the University of Wisconsin-Madison, and her MD and PhD degrees from the University of Michigan in Ann Arbor. She completed clinical fellowship training in the combined National Heart, Lung, and Blood Institute/National Cancer Institute fellowship at the National Institutes of Health and is board certified in hematology and medical oncology. Her current research, with Dr. Daniel Link at Washington University in St. Louis uses single-cell analysis techniques including imaging, RNA sequencing, and DNA sequencing to understand the recurrence of acute myeloid leukemia (AML) and myelodysplastic syndromes (MDS). She is particularly interested in studying patients with acquired and inherited defects in DNA damage repair to understand the risk of therapy-related myeloid neoplasms and germline predisposition for hematologic malignancies.

Jacquelyn Powers, MD
Dr. Powers is an assistant professor of pediatrics in the Section of Hematology/Oncology at Baylor College of Medicine in Houston. She received her undergraduate degree from Rice University and her MD at the University of Texas Medical Branch at Galveston, and did her pediatric residency at UT Southwestern in Dallas. Under the mentorship of Dr. George Buchanon she also completed her hematology/oncology fellowship and received a Master of Science degree in Clinical Sciences at UTSW. In 2015 she participated in the ASH Clinical Research Training Institute. Within the Texas Children’s Cancer and Hematology Centers, Dr. Powers serves as the Team Lead for General Hematology and is the Founding Director the Iron Disorders and Nutritional Anemias program. Her research focuses on children and adolescents with iron disorders, specifically iron deficiency anemia. The overall goal of her work is to identify the most successful treatment approach for children with iron deficiency anemia from both hematologic and comparative effectiveness perspectives. Her ASH Scholar Award will support the development of implementation strategies for IRONCHILD, a novel web-based intervention she developed to support families of children with iron deficiency anemia.

Idit Sagiv-Barfi, PhD
Dr. Sagiv-Barfi is an instructor at Stanford University School of Medicine where she studies novel immunotherapeutic approaches. She obtained her degree in structural and molecular biochemistry under the supervision of Prof. Alexander Levitzki at the Hebrew University of Jerusalem, Israel. During her time at the Hebrew University, Dr. Sagiv-Barfi received extensive training in organic chemistry, biochemistry and immunology where she synthesized novel tyrosine kinase inhibitors and studied their effect on cancer cells and the immune system. After receiving her PhD, she and joined the laboratory of Dr. Ronald Levy at Stanford University. As a postdoctoral scientist Dr. Sagiv-Barfi’s research focuses on the development of novel immunotherapeutic approaches with an emphasis on the modulation of the tumor microenvironment in
# R&D Helsinn Pipeline

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**Notes:**
1. PONV: Post-Operative Nausea and Vomiting
2. In Japan Akynezo IV only includes fosnetupitant
3. CINV: Chemotherapy Induced Nausea and Vomiting
4. NSCLC: Non-Small Cell Lung Cancer
5. MF-CTCL: Mycosis Fungoides-Type Cutaneous T-Cell Lymphoma
6. On July 2, 2020 AML Phase 3 study with pracinostat was discontinued following an interim analysis indicating lack of efficacy

The safety and efficacy of the agents identified for the investigational uses have not been established; these agents have not been approved for commercial use by any regulatory authority worldwide.

* Agents have received regulatory approvals in other countries.
Disparities

A search of this year’s program using the key word “disparity” yields a total of 84 sessions spanning the Scientific and Education Programs as well as oral and poster abstracts. This feat of coverage is just one piece of the bigger picture, but it highlights an intuitive, reflexive pull forward toward this issue and suggests the presence of a movement. More provocatively, it may be that while this issue has been recognized for a long time, its acknowledgement has been woefully wanting. However, our individual commitments to researching the issue across the United States, may have served as a catalyst, pushing its acknowledgement upstream to higher and higher institutional levels.

The prelude to the coverage of disparities in science at this year’s meeting is a podcast interview conducted by The Hematologist Editor-in-Chief Dr. Laura Michaelis, which presents a brilliant conversation with Dr. Chancellor Donald about disparities in science, outcomes, and access to care (soundcloud.com/ash_hematology/2020-ash-annual-meeting-disparities-in-science-with-drslaura-michaelis-chancellor-donald). ASH-a-Palooza kicked off on Thursday, December 3, bright and early with a Blood Drop session on racial disparities, and on Friday, they featured an ASH Talk on racial disparities moderated by none other than Dr. Ahmar Zaidi.

The Scientific Workshop on Epidemiology “Disparities in Hematologic Diseases: Risk, Outcomes, and Care,” chaired by Dr. Neil A. Zakai and moderated by Drs. James R. Cerhan, James M. Foran, and Wendy Cozen, who kept the session invigorated and engaging, had the stated goal of filling an increasingly pressing “critical gap in the meeting in the areas of epidemiology and population science.” The session offered broad representation of malignant and nonmalignant diseases in hematology as well as a whole new class of hematology, courtesy of the year 2020 — hematologic complications of COVID-19. It provided a forum for epidemiologists, clinicians, and basic scientists to present their research and interact with one another. Above all it created a space for interaction among practitioners and experts as well as trainees with the hopes of capturing their interest in the subject. Furthermore, placing the spotlight on these ever-present threats to improving health in the subject. Furthermore, placing the spotlight on these ever-present threats to improving health in the subject. Furthermore, placing the spotlight on these ever-present threats to improving health in the subject.

The “Special Scientific Session on Race and Science” (available on demand) was co-chaired by two informed and passionate experts, Drs. Alan E. Mast and Wally R. Smith. They were joined by Dr. Lachelle Weeks, currently a third-year fellow in medical oncology, who presented on “The Diversity-Innovation Paradox in Science.” Dr. Weeks created a social justice committee during her residency, stirred by the discomfort she felt with the paradoxically loud silence during rounds and in physician lounges following yet another racial tragedy in 2017. The diversity-innovation paradox dox reveals the incongruence in academic systems, particularly in areas that should be driving innovation and advancements in the field of science. She shared that the percentage of tenured and tenured-track underrepresented minority faculty in the department of arts and sciences at her institution is still unchanged at 3 to 4 percent since 2004. The session provided a “safe space” for ongoing discourse with a live Q&A. I caught up with Dr. Weeks who shared her hopes that this topic du jour provides us with an opportunity to put our brains together and design better data collection models, if we begin with the right premise. Better information will lead to better innovation with broader applicability.

The topic of disparities was captured on the big stage as well, in an abstract presented during the Plenary Scientific session, titled, “Poor Treatment Outcomes of Young (<60 Years) African American Patients (Pts) Diagnosed With Acute Myeloid Leukemia (AML) (Alliance)” (available on-demand). The abstract covered another disparity in malignant hematologic — outcome discrepancy in young adults with AML. The results of the study were presented by Dr. Bhavana Bhatnagar on behalf of Alliance. The molecular portion of the study profiled 81 genes in 1,339 patients with AML treated on frontline Cancer and Leukemia Group B/Alliance protocols. Self-Reported African American race was the most negative patient-associated predictor of overall survival in young (<60 years old) patients with AML. It remained one of the most important negative predictors even considering molecular markers. The authors suggest that these findings serve as an urgent call to action for further elucidation of molecular targets in this patient demographic. To achieve this goal in a much shorter period than the 10-year span of their results, further collaboration of treatment groups, nationally and internationally, might be paramount. For ASH News Daily’s full reporting of this session, including an interview with the authors, see Monday’s coverage of the Plenary Scientific Session.

If you perused the ASH Poster Walk, Healthcare Equity Matters, which also featured a live Q&A, you would find the following relevant posters: Clinical Allogeneic Transplantation Results III (session 732), Health Services Research – Non-Malignant Conditions I (session 901), Health Services Research – Malignant Conditions (Lymphoid Disease; session 901), Health Services Research – Malignant Conditions (Myeloid Disease; session 903); Outcomes Research – Nonmalignant Conditions: Venous Thromboembolism Associated With Cancer and/or COVID-19 (session 904); and Outcomes Research – Malignant Conditions (Lymphoid Disease; Outcomes Research Real World Data Health-care Disparities (session 905).

ASH News Daily would be remiss if we did not include the 2020 ASH Award for Leadership in Promoting Diversity recipient, Dr. Edward J. Benz, Jr., who was honored for his efforts to promote women and underrepresented minority hematologists throughout his career (read a profile of Dr. Benz via http://www.ashnewsdaily.org/uplifting-diversity-strengthening-progress/).

As introduced in the podcast by Dr. Chancellor Donald, this battle has been long and drawn out, initially documented by W.E.B Du Bois in 1899. Keeping the discourse on race, ethnicity, and diversity in the “air” through the various ASH platforms contributes to shifting the fog away ever so slightly, shedding increasing measures of light on the issue.

— Dr. Elna Saah

“Keeping the discourse on race, ethnicity, and diversity in the ‘air’ through the various ASH platforms contributes to shifting the fog away ever so slightly, shedding increasing measures of light on the issue.”

Don’t You Forget About (C)Me

As you walk away from the 2020 ASH Annual Meeting, don’t forget about continuing education credits. Complete information on claiming CME/MOC, requesting a certificate of attendance, and more, can be found at www.hematology.org/meetings/cme-moc-information.

3. Dr. Saah indicated no relevant conflicts of interest.
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“Why I Volunteer”: Corrine Sin Quee, MBBS, FAAP — Children’s International Consortium on Acute Leukemia

The Children’s International Consortium on Acute Leukemia (C-ICAL) is an international network that seeks to improve the care of pediatric patients with acute leukemia.

Dr. Corrine Sin Quee (Princess Margaret Hospital, Nassau, Bahamas) is a pediatric hematologist/oncologist who has been an active participant in C-ICAL since its inception in 2016. Dr. Sin Quee is a champion of the consortium and touts the opportunity it provides for hematologists in the Caribbean to connect with each other and with leaders from ASH and SickKids Hospital with the goal of implementing a common single protocol to treat their pediatric patients. Here she discusses the need for C-ICAL helps meet and the array of possibilities that could emerge by working together.

ASH has other international initiatives to foster clinical networks with leading experts in the field of leukemia and sickle cell disease. C-ICAL enabled physicians in the Caribbean to work together, along with leaders in the field from ASH and SickKids Hospital, Canada, to develop a common single protocol to treat children with acute lymphoblastic leukemia (ALL). There are no more than one or two specialist doctors caring for children with cancer in each of the Caribbean countries, so the ability to meet monthly to discuss these patients with the foremost clinical research experts in leukemia around the world is more than a dream come true.

Getting local institutional review board approval of the protocol was not difficult as it followed standard treatment for ALL. The participation was a monitoring process to encourage compliance — treatment, record keeping, and reporting. It is well recognized that conforming to a protocol helps to improve outcomes, and this initiative is helping us to develop a uniform standard of practice and performance. As far as enrollment, patients in general put trust in the doctor and are willing to participate in studies, and this one was easy since again the treatment was standard. A lot has to do with spending time explaining the purpose of the study.

This initiative proves that we can work together, and conform to following the same protocol, even though we live in four different countries. Together we can! We can be accountable for all we have to do. And we can freely discuss our progress, challenges, and complications. There is no element of competition. We share experiences and solutions, and I expect that the Caribbean collaboration will be strengthened and continue for years to come. Maybe one day we can share a common procurement operation to improve our buying power for medications for the entire Caribbean.

Our greatest accomplishment is the unity achieved among the Caribbean pediatric hematologists/oncologists and the commitment to work together. There are only six of us, and two more are in training. Our combined population is about 5 million in the four participating countries (the Bahamas, Barbados, Jamaica, and Trinidad and Tobago). The remaining English-speaking countries in the Caribbean have a combined population of approximately another 1 million, with no specialist doctors in the field. Open sharing and support for our expertise will hopefully be enhanced by cross-country governmental support. Ideally, centers of excellence might also be identified in the future and provide spaces where patients can be transferred for initial care to auger best outcomes. This way we can pool our limited resources and maximize the financial and nonfinancial benefits. However, it is a mammoth task to engage governments to get the required commitment at the regional level to create the necessary platform for centralized procurement of drugs or centers of excellence.

“Why I Volunteer”: Lorena Lobo de Figueiredo-Pontes, MD, PhD — International Consortium on Acute Leukemia

The International Consortium on Acute Leukemia (ICAL) is an international network that seeks to improve the care of patients with acute leukemia.

ASH member and ICAL participant Dr. Lorena Lobo de Figueiredo-Pontes (Ribeirao Preto Medical School, University of Sao Paulo, Sao Paulo, Brazil) has been general ICAL coordinator since December 2019, and coordinator of ICAL flow cytometry studies since January 2017. Since her hematology fellowship and PhD studies, she has worked on the challenging search for additional targets to improve outcomes in acute myeloid leukemia (AML), in collaboration with previous mentor Dr. Eduardo Rego, who conceptualized and was the first coordinator of the ICAL studies. As an independent investigator, Dr. de Figueiredo-Pontes felt it was a natural progression of her clinical expertise and research focus to join and take part of the consortium. Here she talks about why the program is so critical for AML clinical practice in Brazil and discusses the consortium’s implications on capacity building for hematology in the region.

“Besides the overall high relapse rates in AML in developing countries like Brazil, treatment outcomes are still significantly inferior to those reported in Europe and the United States. Delays in diagnosis, lack of laboratory assays to perform complete risk stratification, and higher mortality rates associated with infectious complications contribute to these poor outcomes.

“The clinical network in developing countries that has been developed by ICAL will lead to the standardization of methods for diagnosis and assessment of measurable residual disease (MRD), including cytogenetics and molecular and flow cytometry analysis, and uniform treatment protocols among hematology centers. This will result in optimized risk stratification to better define treatment strategies and improve clinical outcomes.

“Although MRD detection by flow cytometry is already being done as part of the study and with good applicability for most patients, implementing next-generation sequencing (NGS) as a universal method with very high sensitivity will substantially improve the molecular detection of residual leukemic cells considering the great genetic heterogeneity of AML. In addition, the inclusion of NGS will allow the implementation of an innovative protocol at my institution and provide training for our laboratory staff. This is not only for the purposes of the ICAL study, but for other hematology/oncology applications at a reference center in Brazil. The support of the Torsten Haferlach Leukemia Diagnostics Foundation was essential for ICAL’s new aim of implementing MDR detection by NGS at the five Latin American hematology centers (Brazil, Peru, Chile, Uruguay, and Paraguay). With the support of Illumina, the Foundation has provided the iSeq 100 equipment as well as reagents needed for the sample run. With the additional collaboration of Dr. Peter Valk from Erasmus University Medical Center, who has contributed the European LeukemiaNet based NGS panel design and specific reagents, and who will provide staff training, we anticipate implementing the methodology to the study in the next few months.”
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Aggressive cancers. She is using the in situ vaccination technique in which the immune stimulating agents are injected directly to one tumor site in the body stimulating T cells within the tumor and causing an immune response specific against tumor antigens throughout the body. Her preclinical studies lead to ongoing clinical trials studying various combinations. The Scholar Award will enable Dr. Sagiv-Barfi research to understand the mechanism underlying resistance to in situ vaccination in aggressive tumors and develop immunotherapeutic strategies to overcome this resistance.

Ashay Sharma, MBBS

Dr. Sharma is an instructor in the Department of Bone Marrow Transplantation and Cellular Therapy at St. Jude Children’s Research Hospital in Memphis. He graduated from medical school at Kasturba Medical College in India and then pursued a postdoctoral fellowship in tumor immunology and graft engineering under the guidance of Dr. Edmund Waller at Emory University. He completed a pediatrics residency at University of Kentucky and a pediatric hematology oncology fellowship at St. Jude. During his fellowship, he studied the genetic regulation of fetal hemoglobin in the laboratory of Dr. Mitchell Weiss. He is currently developing novel transplant and gene therapy clinical trials for patients with sickle cell disease. Dr. Sharma is honored to have been chosen to receive the ASH Scholar Award, which will provide him with critical support to establish himself as an independent investigator. The goal of his research is to advance cellular therapeutics for children with hematologic disorders.

Deborah Siegal, MD, Msc, FRPC

Dr. Siegal is an associate professor in the Department of Medicine within the Division of Hematology at the University of Ottawa. Dr. Siegal graduated from Queen’s University School of Medicine in 2009 and completed Internal Medicine and Hematology training at McMaster University. She holds Master of Science degrees in Pharmacology (University of Toronto) and Health Research Methodology (McMaster University). Dr. Siegal’s primary research interests include improving patient outcomes after anticoagulant-related bleeding, management of anticoagulants in patients who have acute bleeding complications or require urgent surgery, understanding the factors that influence patient and physician decision-making after anticoagulant-related bleeding, and reducing red blood cell transfusion by minimizing iatrogeneic blood loss for laboratory testing. Dr. Siegal has expertise in the design and conduct of pragmatic cluster randomized trials, individual patient randomized trials, mixed-methods studies, observational studies and meta-analyses. She has received peer-reviewed grant support as principal investigator from the Canadian Institutes of Health Research, the American Society of Hematology, CanVECTOR/Heart and Stroke Foundation of Canada, Ontario AFP Innovation Fund, and Hamilton Health Sciences Foundation. She has published 70 peer-reviewed articles including several in high-impact journals such as The New England Journal of Medicine, Circulation, Blood, and Journal of Thrombosis and Haemostasis.

Abhishek Singh, PhD

Dr. Singh is a postdoctoral research fellow at Foxworth Blood Center and Cincinnati Children’s Hospital Medical Center (CCHMC), University of Cincinnati. During his doctoral training at Central Drug Research Institute, India he studied redox mediated molecular regulation of leukemia cell proliferation/apoptosis and the functional aspect of inducible nitric oxide synthase in neutrophil differentiation and phagocytosis, and earned his PhD from Jawaharlal Nehru University, India. In 2016, he joined the laboratory of Dr. Jose A. Cancelas at the University of Cincinnati/CCHMC and carried research to understand the biology of bone marrow (BM) hematopoiesis during steady state and stress conditions. Dr. Singh’s recent work has demonstrated that following total body irradiation towards myeloid-leukemic stem cells, progenitors (HSPC) transplantation, transplanted HSPC transfer part of their mitochondria to the irradiated host stromal cells, which in turn improves the metabolic recovery of recipient BM stromal cells and niche dependent hematopoietic reconstitution. This specialized mitochondrial transfer is cell contact dependent and depends on the expression of the gap junction protein, Connexin 43 on the hematopoietic progenitors. Currently, he is studying the role of Connexin 43 in mitochondrial dynamics and fate with the goal to preserve HSC activity in ex vivo gene therapy approaches. Dr. Singh is honored for the opportunity provided by ASH Scholar award to conduct a project that will illuminate the molecular mechanisms controlling mitochondrial dynamics in bone marrow regeneration.

Amanda Smith, PhD

Dr. Smith is currently an instructor performing experiments with a focus on cancer predisposition syndromes and AML pathogenesis. She has a broad understanding of human bioscience obtained during her undergraduate program from the University of Newcastle, Australia. During her PhD and postdoctoral work, she has become focused on the mechanisms by which hematopoiesis becomes dysregulated during transformation to AML and the way initiating mutations create a pre-leukemic state. Her research also has a focus on cancer predisposition syndromes driven by germline mutations in known cancer genes including DNMT3A, DNMT1, and WAC. Dr. Smith utilizes cell lines, murine models, and patient samples to understand the mechanisms by which these genes drive transformation, particularly towards hematopoietic leukemias. To date, her research has led to seven peer reviewed publications and one book chapter. Dr. Smith is currently continuing training under the mentorship of Dr. Tim Ley at Washington University in St Louis and plans to pursue a transition to independence in the next two years. The receipt of the ASH Fellow to Faculty award will be instrumental in assisting Dr. Smith to generate data towards a publication as well as preliminary data to be included in an independence award application in the future.

Alexandra Soukup, PhD

Dr. Soukup is a postdoctoral research fellow in the laboratory of Dr. Emery Bresnick at the University of Wisconsin-Madison. She obtained her BS in genetics and microbiology in 2008, followed by her PhD in 2014 under the supervision of Dr. Nancy Keller. Her graduate research focused on employing chromatin based regulatory mechanisms in the fungus Aspergillus in order to identify and purify known and previously undiscovered natural products. This mechanism was leveraged into early translational postdoctoral research with the goal of improving production of clinically or agriculturally relevant compounds. Her current research further these translational applications by modeling regulatory mechanisms governing developmental and regenerative hematopoiesis and earning her a Career Development Program Special Fellow award from the Leukemia and Lymphoma Society in 2019. She discovered introduction of a single-nucleotide human disease mutation within the conserved +9.5 enhancer of the gene encoding the transcription factor GATA2 disrupts an Ets motif and attenuates hematopoietic regeneration. She is currently leveraging this and other predisposition models to investigate triggers of bone marrow failure and leukemogenesis in systems poised for hematopoietic collapse. Dr. Soukup is delighted and honored to have been selected as a recipient of the ASH Scholar Award.

Erica Sparkenbaugh, PhD

Dr. Sparkenbaugh is an assistant professor at UNC Chapel Hill in the Blood Research Center, where she studies the role of coagulation in sickle cell disease (SCD). She obtained her doctoral degree in pharmacology and toxicology from Michigan State University, where she gained extensive training in evaluating mechanisms of cell death, inflammation, organ injury, and coagulation in animal models. In 2012, she joined the laboratory of Dr. Rafał Pawlinski at UNC for her postdoctoral research investigating the role of coagulation in SCD. Her studies revealed that tissue factor (TF), factor X (FX) and thrombin contribute to inflammation in mouse models of SCD. She has also been investigating the contact activation pathway in SCD, and recently discovered that high molecular weight kininogen contributes to inflammation, nephropathy, and early mortality in sickle mice. Most recently, Dr. Sparkenbaugh found that the TF-FXa-thrombin pathway contributes to microvascular stasis in sickle mice, likely via thrombin-dependent activation of protease activated receptor-1 (PAR-1). For her Scholar Award project, she will explore the effects of beneficial PAR-1 activation by activated protein C on the complications of SCD. Dr. Sparkenbaugh is grateful for the support provided by the ASH Scholar Award as she transitions to an independent research career.
Anemia

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Annmaria Gullà, MD, Receives Joanne Levy Memorial Award

Annmaria Gullà, MD, of Dana Farber Cancer Institute, was presented with the 2020 Joanne Levy, MD, Memorial Award for Outstanding Achievement. This award is presented to the ASH Scholar Award recipient with the highest-scoring abstract at the ASH annual meeting, as determined by the appointed abstract reviewers. It honors the memory and legacy of Dr. Joanne Levy, who passed away in 2004. Dr. Levy was a past Scholar Award recipient and a respected ASH member. She graduated from Harvard Medical School and went on to receive many esteemed awards and honors, including the ASH Junior Faculty Scholar Award in 2000. The Joanne Levy Memorial Award is made possible by the Levy family to continue her legacy and promote excellence in hematology research.

Dr. Gullà is a research fellow in the Department of Medical Oncology, Division of Hematologic Neoplasia, at Dana Farber Cancer Institute. Dr. Gullà views this award as a steppingstone in her research career. “I am honored to be recognized by the hematology community to receive the prestigious Joanne Levy, MD, Memorial Award,” she said. “As an ASH Scholar and early-career cancer scientist, this award represents a true morale booster for my work and my career toward independence,” she added.


*All abstracts are available for on-demand viewing on the virtual meeting platform (annualmeeting.hematology.org), or as part of the Blood Supplement (ashpublications.org/blood/issue/136.Supplement%201).*

National Partner Society Abstract Achievement Awards

The National Partner Society Abstract Achievement Awards are awarded to an international hematologist, who must be a member of the supporting organization and resident of the respective country, to help advance knowledge and inspire continued professional development in hematology. The awardees can be undergraduate students, medical students, graduate students, resident physicians, or postdoctoral MD or PhD fellows.

ASH-Haematology Society of Australia and New Zealand (HSANZ) Abstract Achievement Awards

The ASH-HSANZ AAA is granted to up to two trainees who are first or senior author and presenter of the most meritorious country-specific project.

Naranie Shamuganathan, FRACP, FRCPA, MBBS
Royal Adelaide Hospital and SA Pathology

Abstract 49
Title: Mutated Cancer-Related Genes Detected at Diagnosis of CML and a Novel Class of Variant Associated with the Philadelphia Translocation Are Both Independent Predictors of Inferior Outcomes 632. Chronic Myeloid Leukemia: Therapy – Building the Future of CML.

ASH-Japanese Society of Hematology (JSH) Abstract Achievement Awards

The ASH-JSH AAA is granted to up to three trainees who are the first or senior author and presenter of the most meritorious country-specific project.

Yasunori Kogure, MD, PhD
National Cancer Center Research Institute

Abstract 280
Title: Whole-Genome Analysis of Adult T-Cell Leukemia/Lymphoma 621. Lymphoma—Genetic/Epigenetic Biology: Genetic and epigenetic profiling of malignant lymphomas

Ryuunosuke Saiki, MD
Kyoto University

Abstract 385
Title: Combined Landscape of Gene Mutations and Copy Number Alterations in Clonal Hematopoiesis: Analysis in 10,612 Japanese Individuals 503. Clonal Hematopoiesis: Aging and Inflammation

Shunichiro Yasuda, MD
Tokyo Medical and Dental University

Abstract 1262
Title: MPL Overexpression Induces a High Level of Mutant-Calr/MPL Complex: A Novel Mechanism of Ruxolitinib Resistance in Myeloproliferative Neoplasms with Calr Mutations 635. Myeloproliferative Syndromes: Basic Science: Poster I

ASH-Society Italiana di Ematologia (SIE) Abstract Achievement Awards

The ASH-SIE AAA is granted to up to two trainees who are the first or senior author and presenter of the most meritorious country-specific project.

Luca Bertamini, MD
GIMEMA

Abstract 720
Title: Poor Prognosis of Multiple Myeloma Predicted by High Levels of Circulating Plasma Cells Is Independent from Other High-Risk Features but Is Modulated By the Achievement of Minimal Residual Disease Negativity 651. Myeloma: Biology and Pathophysiology, excluding Therapy II

Raffaele Palmieri, MD
University of Rome Tor Vergata

Abstract 392
Title: Validation of ELN2017 Risk Stratification in a Post-Hoc Analysis of the Prospective Biomarker-Based Gimema AML1310 Protocol 613. Acute Myeloid Leukemia: Molecular Mutations and Their Prognostic Implications

ASH-British Society of Hematology (BSH) Abstract Achievement Award

The ASH-BSH AAA is granted to up to three trainees who are the first or senior author and presenter of the most meritorious submitted abstract.

Deena Iskander, MD
Imperial College London

Abstract 2749
Title: Single-Cell Transcriptional Landscapes of Human Bone Marrow Reveal Distinct Erythroid Phenotypes Underpinned By Genotype in Diamond-Blackfan Anemia 508. Bone Marrow Failure: Poster III

Jayna Mistry, BSc
The University of East Anglia

Abstract 451
Title: Enhanced Free Fatty Acid Uptake Via CD36 Promotes a Metabolic Switch to B-Oxidation within Hematopoietic Stem Cells in Response to Acute Infection 506. Hematopoiesis and Stem Cells: Microenvironment, Cell Adhesion, and Stromal Stem Cells

Rebecca Shaw, MBChB
University of Liverpool

Abstract 1773
Title: Circulating Histone Levels Correlate with the Severity of COVID-19 and the Extent of Coagulation Activation and Inflammation 321. Blood Coagulation and Fibrinolytic Factors: Poster II

To learn more about these new partner awards, and to apply for the future award cycle, visit www.hematology.org/awards/abstract-achievement.
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THE ONLY FDA APPROVED IV IRON REPLACEMENT THAT CAN ADMINISTER UP TO 1000 mg WITH A SINGLE INFUSION IN ≥20 MINUTES

INDICATIONS
Monoferric is indicated for the treatment of iron deficiency anemia (IDA) in adult patients:

• who have intolerance to oral iron or have had unsatisfactory response to oral iron
• who have non-hemodialysis dependent chronic kidney disease (NDD-CKD)

IMPORTANT SAFETY INFORMATION

CONTRAINDICATIONS
Monoferric is contraindicated in patients with a history of serious hypersensitivity to Monoferric or any of its components. Reactions have included shock, clinically significant hypotension, loss of consciousness, and/or collapse.

WARNINGS AND PRECAUTIONS

Hypersensitivity Reactions
Serious hypersensitivity reactions, including anaphylactic-type reactions, some of which have been life-threatening and fatal, have been reported in patients receiving Monoferric. Patients may present with shock, clinically significant hypotension, loss of consciousness, and/or collapse. Monitor patients for signs and symptoms of hypersensitivity during and after Monoferric administration for at least 30 minutes and until clinically stable following completion of the infusion. Only administer Monoferric when personnel and therapies are immediately available for the treatment of serious hypersensitivity reactions. Monoferric is contraindicated in patients with prior serious hypersensitivity reactions to Monoferric or any of its components. In clinical trials in patients with IDA and CKD, serious or severe hypersensitivity reactions were reported in 0.3% (6/2008) of the Monoferric treated subjects. These included 3 events of hypersensitivity in 3 patients; 2 events of infusion-related reactions in 2 patients and 1 event of asthma in one patient.

Iron Overload
Excessive therapy with parenteral iron can lead to excess iron storage and possibly iatrogenic hemosiderosis or hemochromatosis. Monitor the hematologic response (hemoglobin and hematocrit) and iron parameters (serum ferritin and transferrin saturation) during parenteral iron therapy. Do not administer Monoferric to patients with iron overload.

ADVERSE REACTIONS

Adverse reactions were reported in 8.6% (172/2008) of patients treated with Monoferric. Adverse reactions related to treatment and reported by ≥1% of the treated patients were nausea (1.2%) and rash (1%). Adjudicated serious or severe hypersensitivity reactions were reported in 6/2008 (0.3%) patients in the Monoferric group. Hypophosphatemia (serum phosphate <2.0 mg/dL) was reported in 3.5% of Monoferric-treated patients in Trials 1 & 2. To report adverse events, please contact Pharmacosmos at 1-888-828-0655. You may also contact the FDA at www.fda.gov/medwatch or call 1-800-FDA-1088.

Please see Brief Summary of Prescribing Information on adjacent pages.
**MonoFerric® (ferric derisomaltose) injection**

**BRIEF SUMMARY OF PRESCRIBING INFORMATION**

**MONOFERRIC (ferric derisomaltose) injection**

**INDICATION AND USAGE:** MonoFerric is an iron replacement product indicated for the treatment of iron deficiency anemia in adult patients.

- who have intolerance to oral iron or have had unsatisfactory response to oral iron.
- who have non-hemolysis dependent chronic kidney disease.

**DOSAGE AND ADMINISTRATION:** For patients weighing 50 kg or more: Administer 1,000 mg of MonoFerric by intravenous infusion over at least 20 minutes as a single dose. Repeat dose if iron deficiency anemia recours.

For patients weighing less than 50 kg: Administer MonoFerric as 20 mg/kg actual body weight by intravenous infusion over at least 20 minutes as a single dose. Repeat dose if iron deficiency anemia recours.

The dosage of MonoFerric is expressed in mg of elemental iron. Each ml of MonoFerric contains 100 mg of elemental iron.

Only administer MonoFerric when personnel and therapies are immediately available for the treatment of serious hypersensitivity reactions.

**DOSAGE FORMS AND STRENGTHS:** MonoFerric is a sterile, dark brown, non-transparent aqueous solution available as:

- Injection: 1,000 mg iron/10 mL (100 mg/mL) single-dose vial
- Injection: 500 mg iron/5 mL (100 mg/mL) single-dose vial
- Injection: 100 mg iron/mL single-dose vial

**CONTRAINDICATIONS:** MonoFerric is contraindicated in patients with a history of serious hypersensitivity reactions to ferrous salt-containing products. Reactions have included shock, clinically significant hypotension, loss of consciousness, and/or collapse.

**WARNINGS AND PRECAUTIONS**

**Hypersensitivity Reactions:** Serious hypersensitivity reactions, including anaphylactic-type reactions, some of which have been life-threatening and fatal, have been reported in patients receiving MonoFerric. Patients may present with shock, clinically significant hypotension, loss of consciousness, and/or collapse. Monitor patients for signs and symptoms of hypersensitivity during and after MonoFerric administration for at least 30 minutes and until clinically stable following completion of the infusion. Only administer MonoFerric when personnel and therapies are immediately available for the treatment of serious hypersensitivity reactions. MonoFerric is contraindicated in patients with prior serious hypersensitivity reactions to MonoFerric or any of its components. Reactions have included shock, clinically significant hypotension, loss of consciousness, and/or collapse.

**Iron Overload:** Excessive therapy with parenteral iron can lead to excess iron storage and possibly iatrogenic hemosiderosis or hemochromatosis. Monitor the hematologic response (hemoglobin and hematocrit) and iron parameters (serum ferritin and transferrin saturation) during parenteral iron therapy. Do not administer MonoFerric to patients with iron overload.

**ADVERSE REACTIONS**

**Clinical Trials Experience:** Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed cannot be directly compared to rates in other clinical trials and may not reflect the rates observed in clinical practice.

The safety of MonoFerric was evaluated in 3008 patients with iron deficiency anemia enrolled in two randomized, actively-controlled trials. Trial 1 enrolled adult patients with iron deficiency anemia with intolerance to oral iron or had an unsatisfactory response to oral iron with a clinical need for repletion of iron stores. Eligible subjects also had to have serum ferritin ≤200 μg/L or ≤300 mg/dL if TSH >30%. Trial 1 and Trial 2: In the two randomized, actively-controlled clinical trials, Trials 1 and Trial 2, patients were randomized in a 2:1 ratio to intravenous MonoFerric (n = 2008) or intravenous iron sucrose (n = 1000) respectively. MonoFerric was administered as a single intravenous infusion of 1000 mg diluted in 100 mL 0.9% sodium chloride and given over approximately 20 minutes (approximately 50 mg iron/min). Iron sucrose was administered as 200 mg undiluted intravenous injections over approximately 2–5 minutes and repeated according to standard practice or physician choice up to a maximum of five times (1000 mg) within the first two weeks starting at baseline.

The data described below reflect exposure to MonoFerric in 2008 patients exposed to a 1000 mg single intravenous dose of MonoFerric. The mean cumulative intravenous iron exposure was 984 mg. Trial 1 included 1483 patients with iron deficiency anemia in the safety analysis that had intolerance to oral iron or had had unsatisfactory response to oral iron or with a clinical need for rapid repletion of iron stores. Trial 2 included 1255 patients in the safety analysis who had non-dialysis dependent chronic kidney disease (NDDCKD). In these two 8-week trials, patients were randomized 2:1 to treatment with MonoFerric or iron sucrose. MonoFerric was intravenously administered as a single dose of 1000 mg.

**Pregnancy:** There are no available data on MonoFerric use in pregnant women to evaluate for a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. Published studies on the use of intravenous iron products in pregnant women have not reported an association with adverse developmental outcomes. However, these studies cannot establish or exclude the presence of any drug-related risk during pregnancy because the studies were not designed to assess for the risk of major birth defects. There are risks to the mother and fetus associated with untreated iron deficiency anemia (IDA) in pregnancy.

**Drug Interactions:** MonoFerric may affect the absorption of other drugs and may increase or decrease the plasma concentrations of other drugs, depending on the degree of chelation of the iron and other drugs by MonoFerric. This may result in a clinically significant change in the plasma concentration of the co-administered drug and may require dose adjustment or consideration of alternative medications. Monitor the plasma concentration of drugs that may be affected by MonoFerric.

**OVERDOSAGE:** MonoFerric overdose may be managed symptomatically. There is no specific antidote. In the event of an overdose, MonoFerric is not expected to cause significant toxicity, given its low oral bioavailability and short half-life.

**ADVERSE REACTIONS SUMMARY:** Adjudicated serious or severe hypersensitivity reactions were reported in 6/2008 (0.3%) patients treated with MonoFerric. Adverse reactions related to treatment and reported by ≥1% of the treated patients in the combined analysis of Trial 1 and 2 are listed in Table 1.

Table 1. Adverse Reactions (≥1%) in Patients Receiving MonoFerric in Clinical Trials 1 and 2

<table>
<thead>
<tr>
<th>Adverse Reaction</th>
<th>MonoFerric (N = 2008)</th>
<th>Iron Sucrose (N = 1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Nausea</td>
<td>21 (1.1)</td>
<td>10 (1.0)</td>
</tr>
<tr>
<td>Rash</td>
<td>27 (1.4)</td>
<td>7 (0.7)</td>
</tr>
</tbody>
</table>

Adjudicated serious or severe hypersensitivity reactions were reported in 6/2008 (0.3%) patients treated in the MonoFerric group. Hypophosphatemia (serum phosphate <2.0 mg/dL) was reported in 3.5% of MonoFerric-treated patients in Trials 1 & 2.

**Post-marketing Experience:** Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure. The following adverse reactions have been most commonly reported from the post-marketing spontaneous reports with MonoFerric:

- Cardiovascular disorders: Tachycardia
- Gastrointestinal disorders: Abdominal pain, nausea and vomiting, constipation, diarrhea
- General disorders and administration site conditions: Fatigue, pyrexia, chest pain, chills, Fishbane reaction, extravasation, influenza like symptoms, injection site reactions
- Immune System disorders: Anaphylactic/anaphylactoid reaction, hypersensitivity
- Investigations: Hepatic enzymes increased
- Musculoskeletal and connective tissue disorders: Back pain, muscle spasms, arthralgia, myalgia
- Nervous system disorders: Dizziness, headache, paresthesia, dysgeusia, seizure, loss of consciousness, syncope
- Psychiatric disorders: Anxiety
- Respiratory, thoracic, and mediastinal disorders: Dyspnea, cough
- Skin and subcutaneous tissue disorders: Erythema, urticaria, discoloration skin rash, pruritus, sweating
- Vascular disorders: Hypertension, hypotension, flushing, phlebitis
- Extravasation of MonoFerric at the injection site that may lead to irritation of the skin and potentially long lasting brown discoloration at the site of injection has also been reported.

**DRUG INTERACTIONS:** Formal drug interactions studies have not been performed with MonoFerric.

**USE IN SPECIFIC POPULATIONS**

**Pregnancy:** There are no suitable and adequate studies in pregnant women to evaluate for a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes.

**Pediatric Use:** Safety and effectiveness have not been established in pediatric patients.

**Geriatric Use:** Of the 9394 patients in clinical studies of MonoFerric, 25% were 65 years and over.

**Hypersensitivity Reactions:** Advise patients to report any signs and symptoms of hypersensitivity to MonoFerric or any of its components.

**PATIENT COUNSELING INFORMATION**

Advise the patient to read the FDA-approved patient labeling (Patient Information).

Prior History of Allergies to Parenteral Iron Products: Question patients regarding any prior history of reactions to parenteral iron products.

**Hypersensitivity Reactions:** Advise patients to report any signs and symptoms of hypersensitivity that may develop during and following MonoFerric administration, such as rash, itching, dizziness, dizziness, lightheadedness, swelling, and breathing problems.

MonoFerric is manufactured under license from Pharmacosmos A/S, Denmark.

This is not all the risk information for MonoFerric. Please see www.monoferic.com for Full Prescribing Information.
in no significant differences in event-free survival (12.6 vs. 10.3 months) or OS (18.4 vs. 23.1 months). Details about the supportive care measures and subset analyses will be eagerly anticipated given these discouraging findings.

After the euphoria surrounding the long-awaiting advances in treating acute myeloid leukemia (AML) unveiled at the previous three ASH annual meetings, this year was relatively austere. We quickly forget that most of life “is a game of inches.” A reassuringly unified theme from this meeting is the established safety and early efficacy of adding the BCL-2 inhibitor venetoclax to intensive chemotherapy (ICT) backbones in younger/fitter patients with AML, particularly those with adverse-risk disease. Partner regimens included cladribine, idarubicin, and ara-c (CLIA; poster presentation #2854); fludarabine, ara-c, granulocyte colony stimulating factor, and idarubicin (FLAG-IDA; oral abstract #332); daunorubicin/cytarabine (7+3; poster presentation #1038); CPX-351 (oral abstract #28); and even fludarabine + busulfan RIC for HSCT (oral abstract #190). A related provocative question introduced at this meeting is whether intensive chemotherapy is really the preferred partner for venetoclax in younger/fitter patients with European LeukemiaNet adverse risk (i.e., genomically unstable) disease, with the first few results from a pilot study of venetoclax (NB: target dose during induction was 600 mg daily) plus azacitidine reported in this population (poster presentation #2855). The second theme in AML is the expansion of therapiesagnostic to the traditionally poor prognosis conferred by TP53 mutations, with updated results from the magrolimab (macrophage checkpoint inhibitor) plus azacitidine combination presented by Dr. David Sallman in patients ineligible for ICT (oral abstract #330). An overall response rate (ORR) of 69 percent (45% complete response [CR]) in TP53 mutated patients translated to an unprecedented median OS of 12.9 months. Consistent with recent efforts to rigorously study the drivers of racial disparities in health outcomes more generally, was the Scientific Plenary session abstract demonstrating worse disease-free survival and OS in Black compared to white patients younger than 60 years treated for AML on CALGB/Alliance ICT protocols. This was despite adjustment for relevant disease and socioeconomic factors as well as similar rates of CR and early death. While many of the causal factors could not be captured in these data, a striking finding was that there were differential outcomes between the two groups even in the subset of patients with “favorable risk” NPM1 mutated/FLT3-ITD low/wildtype disease, calling into question the broad applicability of current prognostic models.

While the management of B-cell acute lymphoblastic leukemia (B-ALL) with targeted and immune-based therapies leapt out of the starting blocks a few years ago, this year was about fine-tuning the application of these tools. The incorporation of blinatumomab and/or inotuzumab into frontline regimens for Philadelphia-negative B-ALL in younger (hyperCVAD; cyclophosphamide, vincristine, doxorubicin, and dexamethasone) backbone, oral abstract #464) and older (reduced intensity hyperCVAD backbone, poster presentation #1014) patients was shown to be both feasible and to induce deep, durable responses. A wonderfully practical yet easily overlooked study (oral abstract #584) demonstrated that the use of multiparameter flow cytometry (MFC) performed on the cerebrospinal fluid at baseline in adults with ALL treated with frontline hyperCVAD was more predictive than traditional cyto-spin for central nervous system (CNS) relapse. Moreover, a traumatic lumbar puncture (>10 red blood cells/microliter) did not increase the risk of CNS relapse if the cerebral spinal fluid sample was negative for disease by MFC. In sharp contrast, effective target-ed therapeutic approaches in T-cell ALL (T-ALL) are still lacking. As a starting point, however, the multi-omics characterization of adults with T-ALL treated on GMALL protocols (oral abstract #395) highlighted an age-related distribution of molecular subgroups with TLX1-driven cases demonstrating particularly good outcomes (93% minimal residual disease [MRD] negativity CR after first consolidation, 93% 5-year OS).

In the realm of B-cell non-Hodgkin lymphomas (NHLs), LOXO-305 emerged this meeting as the Bruton tyrosine kinase (BTK) inhibitor “star du jour.” In contrast to ibrutinib and its newer-generation covalent-binding brethren, LOXO-305 is a non-covalent and thus reversible BTK inhibitor. This enables it to have persistent activity even in tumors with high BTK turnover. Moreover, it does not require the C481 site for binding to the ATP domain, thus overcoming C481S resistance mutations. In R/R CLL/small lymphocytic lymphoma, including patients treated with ibrutinib, the ORR with LOXO-305 monotherapy was 62 percent with most responses being partial responses (oral abstract #542). Similarly, in R/R mantle cell lymphoma, including patients previously treated with HSCT or chimeric antigen receptor T-cell (CAR-T) therapy, the ORR was 52 percent (25% CR) with LOXO-305 (oral abstract #117). Foliacular lymphoma, long overshadowed by the use of “sexy” cellular therapies in aggressive B-cell NHLs, finally got its due this year with the phase II ELARA trial demonstrating an ORR of 83 percent (CR 65%) and a six-month progression-free survival (PFS) of 73 percent with tisagenlecleucel (poster presentation #1149). Negative findings are informative too, although almost never included in any “best of” series. In contrast to the ECELON-2 study published earlier this year demonstrating an OS benefit to using BV-CHP (brentuximab vedotin, cyclophosphamide, hydroxydaunorubicin, prednisone) over CHOP (cyclophosphamide, hydroxydaunorubicin, vincristine, and prednisone) in CD30+ peripheral T-cell lymphomas (PTCLs), the addition of the histone deacetylase inhibitor romidepsin to CHOP did not improve outcomes and seemingly worsened toxicity in the final analysis of the phase III presented at the meeting (oral abstract #39).

The therapeutic landscape in multiple myeloma (MM) has taken a kaleidoscope to the uninitiat-ed. With respect to frontline regimens that include lenalidomide maintenance, consolidation with an autologous stem cell transplant (ASCT) continues to be supported, even with newer induction regimens. Both the IFM DFCI 2009 study (RVD [lenalidomide, bortezomib, dexamethasone] with upfront ASCT vs. additional RVD and ASCT only at relapse) and FORTE study (KRd [carfilzomib, lenalidomide, dexamethasone] with or without ASCT) favored the ASCT arms with superior MRD negativity and long-term PFS rates (although similar OS) reported this year. While BCMA-directed CAR-T therapies were all the rage in R/R myeloma last year, bispecifics appear to be just as effective and possibly less toxic in the same patient population.

—Dr. Danielle Hammond

While BCMA-directed CAR-T therapies were all the rage in R/R myeloma last year, bispecifics appear to be just as effective and possibly less toxic in the same patient population.

—Dr. Danielle Hammond

A Farewell From the 2020 ASH News Daily Team

Over the past several days, you’ve gone on a ride with our 2020 ASH News Daily Team as your guides. We couldn’t see you in person, but the beauty of what we accomplish as scientists and clinicians is that nothing (even the lack of a physical meeting) can stop it. I could make an argument that 2020 ASH News Daily had the single most significant mission of helping you navigate a hectic and chaotic meeting from afar; and I am immensely proud of my authors and their efforts. But in the end, you are ASH—the presenters and attendees of this meeting. All we have done is show you a reflection of yourselves, and for that opportunity we are grateful.

—Ahmar Zaidi, MD (＠drzicklecell), Editor, 2020 ASH News Daily

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ASH Announces 2020 Minority Graduate Student Abstract Achievement Awards

The Minority Graduate Student Abstract Achievement Award is part of the ASH Abstract Achievement Award program. This award program is meant to encourage minority graduate students in the field of hematology and is part of the broader minority recruitment initiative at ASH, which also includes the Minority Medical Student Award Program (MMSAP), the Minority Resident Hematology Award Program (MRHAP), and the ASH-Harold Amos Medical Faculty Development Program (ASH-AMFDP) in partnership with the Robert Wood Johnson Foundation. The goal of the Minority Graduate Student Abstract Achievement Award is to attract and retain minority PhD students to the field of hematology through the ASH annual meeting. At this meeting, students will have the opportunity to hear the latest advances in hematology-related research and interact with ASH leadership, senior researchers, and minority physicians, scientists, and students. These awards go to select graduate students to acknowledge their accomplishments in the field of hematology.

*All abstracts are available for on-demand viewing on the virtual meeting platform (annualmeeting.hematology.org), or as part of the Blood Supplement (ashpublications.org/blood/issue/136/Supplement%201).

Adedamola Elujoba-Bridenstine, MS
The University of Wisconsin, Madison
Abstract 2735
Title: The Neurotransmitter Receptor Gabbr1 Regulates Proliferation and Function of Hematopoietic Stem and Progenitor Cells

Mary Figueroa, BS
MD Anderson Cancer Center
Abstract 1882
Title: Cigarette Smoke or Cigarette Condensate Exposure Enhances Growth of FLT3-ITD AML Models and Alters DNA Methylation and Leukemic Gene Expression

Zanshe Thompson, MS
University of South Carolina
Abstract 328
Title: Ing4 Suppresses Quiescence and Inflammation in Hematopoietic Stem Cells

Emaan Madany, BS
Cedars-Sinai Medical Center
Abstract 2750
Title: Bone Marrow Stromal Antigen 2 Is Critical for IFNy-Dependent Hematopoietic Stem Cell Activation

Marcus Florez, BS
Baylor College of Medicine
Abstract 2750
Title: Bone Marrow Stromal Antigen 2 Is Critical for IFNy-Dependent Hematopoietic Stem Cell Activation

Enjoy Free Education at Your Fingertips!

Stream ASH’s FREE educational webinars presented by experts in the hematology field! Topics cover current information on how to best diagnose and care for patients, especially in the time of COVID-19, and provide insights into a variety of issues relevant to hematology.

Recent webinar topics:
- ASH Guidelines on the Use of Anticoagulation in Patients with COVID-19
- Advocacy 101
- Implicit Bias and Health Equity
- Curriculum Design
- COVID-19 and Thrombosis
- Systems-Based Hematology and Medical Education
- Technology and Large Group Teaching in Times of Distance Learning
- Administrative Roles in Medical Education
- The Use of Convalescent Plasma During COVID-19

Learn more at www.hematology.org/webinars.
2020 ASH Foundation Run/Walk: A Virtual Run With a Mission

Nearly 850 registrants ran or walked their own 3K or 5K route between November 27 and December 11 to participate in the 2020 ASH Foundation Run/Walk. ASH is pleased to announce that this year’s sponsors, runners, walkers, and all of their supporters helped the Foundation raise a total of $76,585 for the ASH Research Restart Award Fund. Here are the results of the race (including clock times) and a few photos submitted on Social Media using the hashtags #IRunForASH #IWalkForASH.

**TOP CORPORATE TEAMS**
- Team Janssen Oncology ........................................ (229 participants)
- #TeamKura .......................................................... (91 participants)
- Team AstraZeneca ............................................... (79 participants)

**5K RESULTS**

**WOMEN**
- Meredith Unger, Wayne, PA ............................... (0:20:56)
- Miranda Dunnett, Billerica, MA ............................. (0:22:03)
- Kerry Lannert, Seattle, WA ................................. (0:22:10)

**MEN**
- Christopher Campen, Greenville, SC .................... (0:17:54)
- Jacques Maillet, Moncton, NB, Canada .................... (0:18:03)
- Brian Clas, Darien, CT ........................................ (0:18:16)

**3K RESULTS**

**WOMEN**
- Maren Gaudig, Raritan, NJ ................................. (0:19:27)
- Celine Tey, Kuala Lumpur, Myanmar .................... (0:21:00)
- Nelly Oliver, Somerville, MA ............................... (0:21:00)

**MEN**
- Tiago Santos, São Domingos de Rana, Portugal ....... (0:16:59)
- Bruno Larvol, San Francisco, CA ......................... (0:21:45)

The ASH Foundation would like to acknowledge the following for their generous support of the 2020 Run/Walk:
Ly Vu, PhD
Dr. Vu is an assistant professor at the Department of Molecular Biology and Biochemistry, Simon Fraser University as well as a Scientist at British Columbia Cancer Research Centre, Vancouver, Canada. Dr. Vu earned a bachelor’s degree from Vietnam National University. She received her PhD from Gerstner Sloan Kettering Graduate School of Biomedical Sciences as a Vietnam Education Foundation graduate fellow and underwent post-doctoral training at Memorial Sloan Kettering Cancer Center. Dr. Vu has led several studies uncovering critical roles of RNA binding proteins and RNA modifications in pathogenesis of acute myeloid leukemia (AML). Her laboratory aims to understand the control of stem cells with the focus on novel mechanisms of post-transcriptional and translational regulation during normal and malignant hematopoiesis. In exploring these largely uncharted areas, the ultimate goal of her lab is to develop innovative therapeutic approaches to improve outcomes in AML patients. Dr. Vu received several prestigious awards from the Damon Runyon Cancer Research Foundation, National Cancer Institute NIH Pathway to Independence Award K99, The Leukemia and Lymphoma Society, as well as generous funding from Natural Science and Engineering Research Council of Canada, John R. Evans Leaders Fund-Canada Foundation for Innovation and the Canada Institutes of Health Research (CIHR).

Julia Warren, MD, PhD
Dr. Warren is a fellow in pediatric hematology/oncology at Washington University in St. Louis where her research focuses on understanding the genetics and molecular mechanisms of severe congenital neutropenia under the mentorship of Dr. Daniel Link. After completing undergraduate studies at the University of Chicago, Dr. Warren joined the MD/PhD (MSTP) program at Washington University where she completed her PhD in Immunology studying osteoclast cytokine receptor signaling with her thesis advisor Dr. Steven Teitelbaum. She then completed her internship and residency at St. Louis Children’s Hospital, pursuing the accelerated research pathway as part of the selective Oliver Langenberg Physician Scientist Training Program. Her work in the Link lab has focused on using exome sequencing to identify new genetic causes of SCN, and preliminary work has identified heterozygous variants in the mitochondrial protein caseinolytic peptidase B (CLPB). In cellular models using primary human cells and cell lines, Dr. Warren has demonstrated an increase in neutrophil progenitor cell apoptosis and evidence of mitochondrial dysfunction. Future studies are aimed at identifying the mechanism underlying this mitochondrial dysfunction, and at understanding the relatively selective defect in granulopoiesis in contrast with patients who have extra-hematopoietic findings in the presence of biallelic CLPB variants.

Lena Winestone, MD
Dr. Winestone is an Assistant Professor in the Department of Pediatrics in the Division of Allergy, Immunology, and Blood & Marrow Transplant at the University of California San Francisco. She earned her MD from the Stanford University School of Medicine and went on to complete her residency in pediatrics at Lucile Packard Children’s Hospital at Stanford. She then completed her fellowship in pediatric hematologic/oncology at the Children’s Hospital of Philadelphia. She also obtained a Master’s in Health Policy Research at the University of Pennsylvania Perelman School of Medicine. She carried out her postdoctoral research in the clinical epidemiology research group of Dr. Richard Aplenc and her work focused on disparities in initial presentation with pediatric acute myeloid leukemia. Dr. Winestone's research agenda continues to focus understanding the mechanisms underlying racial, ethnic, and socioeconomic disparities in access and outcomes for pediatric oncology patients. Her work has been presented in several oral presentations at the ASH annual meetings. Dr. Winestone participated in the ASH Clinical Research Training Program in 2016. The research on access to care within pediatric leukemia that the ASH Scholar Award is supporting stemmed from the mentorship she received during CRITI. Her mixed methods approach involves interviewing patients’ families, gathering quantitative survey and geographic data related to barriers to care, and multilevel modeling of the contribution of SES to access to care. Her long-term goal is to ameliorate existing cancer disparities and promote health equity across the populations we care for. In addition to her research endeavors, Dr. Winestone attends on the blood and marrow transplant service at UCSF Benioff Children’s Hospital.

Andrew Yee, PhD
Dr. Yee is an assistant professor of Pediatrics at Baylor College of Medicine. He received his PhD in chemical engineering from Rice University where he studied endothelial responses to mechanical forces in the laboratory of Dr. Larry McIntire. He then joined the laboratory of Dr. David Ginsburg at the University of Michigan as a postdoctoral fellow where he investigated the relationship between von Willebrand factor (VWF) and coagulation factor VIII (FVIII). Dr. Yee and his colleagues identified a minimal VWF fragment that stabilized circulating FVIII in the setting of complete VWF deficiency and located the primary interface between VWF and FVIII with an initial structure of the complex. With the ASH Scholar Award, Dr. Yee continues to investigate VWF biology using molecular approaches to determine the mechanisms by which intrinsic and extrinsic dysregulations of VWF may disrupt hemostasis.

Seongseok Yun, MD, PhD
Dr. Yun is an assistant member in the Department of Malignant Hematology at the Moffitt Cancer Center in Florida. He earned his MD from Seoul National University, College of Medicine in South Korea and his PhD from Mayo Graduate School, College of Medicine in Minnesota under the mentorship of Dr. Scott Kaufman. He completed clinical training in hematology and medical oncology at Moffitt. During his fellowship, he joined the lab of Dr. John Cleveland where he investigated the molecular circuits that contribute to the development and maintenance of acute myeloid leukemia (AML). His work involved characterizing the role of MYC-directed suppression of Transcription Factor EB (TFEB), which he identified as a tumor suppressor in acute myeloid leukemia. Dr. Yun’s laboratory focuses on identifying the pathways that contribute to the development, maintenance, drug induced cytotoxicity, and resistance in acute leukemias. During his fellowship he has received several prestigious awards including ASH Research Training Award for Fellows and the National Institutes of Health K08 award. Dr. Yun is honored to receive the ASH Scholar Award which will support his continued studies in acute leukemias.

Patricia Zerra, MD
Dr. Zerra is an assistant professor in Pathology at Emory University in Atlanta, where her research focuses on identifying the initiating immune events in the response to blood-borne antigens. She completed her undergraduate studies at Connecticut College and received her MD from Jefferson Medical College in Philadelphia. After completing pediatrics residency at the University of Miami/Jackson Memorial Hospital, Dr. Zerra went on to specialize in both pediatric hematology/oncology and transfusion medicine with these fellowships completed at Emory University/Children’s Healthcare of Atlanta. Dr. Zerra’s initial research, under the mentorship of Drs. Sean Stowell and Shannon Meeks, focused on the immune response to Factor VIII as well as red blood cell antigens in an effort to identify initiating immune events to serve as therapeutic targets for antibody prevention. Through this work, she has identified marginal zone B cells as a unique immune population necessary for antibody formation against these two blood-borne antigens. As she establishes herself as an independent physician-scientist with the help of the ASH Scholar Award, Dr. Zerra is excited to focus her studies on the role of inflammatory immune pathways, and their influence on marginal zone B cells in Factor VIII inhibitor formation.
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Introducing True Heroes for the MPN Community

It is a great honor for Incyte Corporation to present the 2020 MPN Heroes. These individuals have demonstrated their strong dedication to making a difference in the lives of people living with myeloproliferative neoplasms (MPNs).

Congratulations to All 2020 MPN Heroes

Nick Callahan
CAREGIVER

Michele A. Couri
PATIENT ADVOCATE

Summer Golden
PATIENT ADVOCATE

Rami S. Komrokji
MD

Nick Napolitano
PATIENT ADVOCATE

Carmen Orrico
PATIENT ADVOCATE

David S. Snyder
MD

Hon. Col. Dr. Samuel Verniero, Jr.
PATIENT ADVOCATE

Register for the 2020 MPN Heroes Virtual Celebration at curetoday.com/mpn20
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Incyte’s Continuing Commitment to the MPN Heroes® Recognition Program

2020 marks our eighth anniversary of sponsoring the MPN Heroes Recognition Program with CURE magazine. Our goal is to recognize the individuals and organizations that bring understanding, compassion, and strength to people living with MPNs.

In our ongoing service to the MPN community, we invite you to join us for the 2020 MPN Heroes Celebration. It will be held virtually on December 4th from 6:00 to 7:30 PM CT. Register now to meet this year’s MPN Heroes and hear their inspiring stories for yourself.

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2020 ASH Abstract Achievement Awards

The Abstract Achievement Awards are available to trainees (undergraduate student, medical student, graduate student, resident physician, and post-doctoral fellow) who are the first and presenting author of an abstract selected for the ASH Annual Meeting. A list of the 2020 recipients has been compiled below. Be sure to congratulate the awardees and look for their abstracts!

Yiqing Cai
Victoria Brooks
Paul Brockelmann
Charlotte Brierley
Dominic Brauer
Yang Liang Boo
Francesca Bonello
Nikoleta Bizymi
Moritz Binder
Luca Biavati
Anushka Bhaskar
Jan Philipp Bewersdorf
Brooks Benard
Hans Jiro Becker
Steve Boyle
Dominic Brauer
Charlotte Brierley
Elana Brindle
Paul Brockelmann
Victoria Brookes
Xuan Cai
Yiqing Cai
Zeya Cao
Franco Castilloc Tokumori
Hamza Celik
Vitoria Ceni
Chandradiya Chakraborty
Monique Chavez
Evan Chen
Jia Chen
Shuai Chen
Xi Chen
Xiaomin Chen
Renee Cheng
Brian Chernek
Alice Chernek
Dai Chihara
Stephen Chong
Anthos Christofides
Biligimol Chumappukul
Joseph
Zuzana Chyra
Courtnee Clough
Richard Coffey
McKenzie Collins
Perla Colunga Pedraza
Esther Cooke
Valentina Cordo'
Matthew Cross
Matteo Da Via'
Benjamin Dannennman
Paige Dausin
Jonathan Day
Vinicius de Molla
Ekaterina Deordieva
Lia DeRoin
Sanjal Desai
Susan DeWolf
Mengyang Di
Matthew DiCenzo
Benjamin Diamond
Emma DiFilippo
Caroline Diorio
Kate Dixon
Larissa Doll
Han Dong
Charlotte Downes
Caroline Duault
Helene Duparc
Laura Eade
Nathan Eaton
Harish Eswaran
Anna Luiza Facchetti
Vinhaes Assumpcao
Amy Fan
Mariah Farrell
Joshua Fein
Bruna Fenerich
Klaudyna Fidyt
Evan Flietner
Sydney Fobare
Stephanie Forte
Benjamin Frost
Christopher Funk
Vanessa Furtado
Eleni Gavrilaki
Olga Gavrilina
Cesar Gentille Sanchez
Dimitrios Giannis
Savanah Gisriel
Vasu Babu Goli
George Goshua
Uti Greenbaum
Juan Gu
Quan Gu
Ashok Gupta
Dikshat Gopal Gupta
Shikha Gupta
Catherine Gutierrez
Fernanda Gutierrez-Rodrigues
Danielle Hammond
Xi Han
Yang Han
Andrew Hantel
Patrick Harrington
Metis Haspeik
Nunki Hassan
J. Erika Haydu
Jonas Heitmann
Charlotte Hellmich
Shelley Herbrich
Sophie Herbst
Daniela Hernandez
Samantha Hershfeldn
Linzi Hobbs
TingtingHong
Anna Hood
Shunfeng Hu
Zhongbo Hu
Qiu-Sha Huang
Andrew Hughes
Jani Huuhtanen
Moayed Ibrahim
Beau Idler
Jana Ihow
Masahiro Ikeda
Ashley Ikuezumi
Brandon Imber
Filip Ionescu
June Iriondo
Arata Ishii
Yusuke Ishihaki
Yusuke Itou
Prajish Iyer
Othmane Jadi
Hamza Jibril
Koji Jimbo
Kimberly Johansson
Patrick Johnson
Solomon Johnson
Andrew Joensrud
Sunil Joshi
Lisa Marie Kaiser
Swetha Kambhampati
Tomasz Kaminski
Minoru Kanaya
Kristine Karkoska
Kerstin Kaufmann
Jasmeet Kaur
Tyce Kearn
Ellen Kendall
Vanessa Kennedy
Mahir Khan
Martin Klatt
Brinayam Knisbacher
Sagar Koduri
Albert Kolomansky
Sunisa Kongkiatkamom
Robert Kraft
Elizabeth Krieger
Thomas Kuczynski
Elena Kum
Vaihlav Kumar
Siddharth Kunte
Salv Kushinsky
Monika Kutyina
Vickie Kwan
Curtis Lachowicz
Madhavi Lakkarak
Carmen Landry
Lucie Lankovi
Meredith Larose
Kristin Larsen
Noemie Leblay
Megan Lee
Shawn Lee
Harry Lesmana
Emily Levy
Marissa Li
Sha Li
Shuang Liang
Chengzheng Liao
Nora Liebers
Tristan Lim
Emily Limerick
Adam Lin
Daniel Lindsay
Swe Mar Lin
Feng-qi Liu
Filar Liu
Jie Liu
Qiang Liu
Ting Liu
Juliane Lohmann
Nico Lopez
Danny Luan
Stephanie Luff
Raphael Lutz
Line Lynggaard
Vinodhini M
Kylee Maclachlan
Giulia Maggioni
Catarina Maia
Abhishek Maiti
Sarah Makhani
Melissa Maltese
Clemonce Marcault
Felix Marquez
Jeffrey Marsal
Marina Martello
Rossella Marullo
Thiyagarar Mayuranathan
Georgia McCaughan
Shelor Meckstroth
Andrew Menssen
Lauren Merz
Akram Mesleh Shayeb
Ovais Mian
Ilaria Michelozzi
Yazan Migdady
Jordan Milner
Jelena Milosevic Feenstra
Pavla Minot
Rucha Modak
Susree Modepalli
Ghulam Rehman
Mohyuddin
Florian Moik
Vinicius Molla
Patrizia Mondello
Elena Monzon Manzano
Eugenio Morelli
Kiyomi Morita
Pablo Mozas
Lana Murilo
Shannon Murphy
Ferran Nadeu
Momoko Nakamura
RAM Nampoothiri
Daniel Natheli
Diu Nguyen
Nam Nguyen
Marena Niewisch
Yuki Nishida
Alex Niu
Laura Notarfranchi
Igor Novitzky-Basso
Yazan Numan
Kevin Nuno
Jamie Oakley
Ifeyinwa Obiorah
Ashlesha Odak
Anne Olazabal-Herrero
Violante Oliveri
Bruno Oliveira
Kelly Olsen
Oblusoba Oluwole
Koya Ono
Ikenna Onyekwere
Charity Oyedeji
Simona Pagliuca
Na Yoon Paik
Heng Pan
Lorena Panaite
Vinodhini M
Line Lynggaard
Raphael Lutz
Line Lynggaard
Vinodhini M
Kylee Maclachlan
»» ABSTRACT ACHIEVEMENT, Page 40
LOXO-305
An investigational, selective, non-covalent BTK inhibitor targeting BTK-wt and BTK C481-mut

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Abstract Achievement Awards

To receive up to three years’ access to nearly 400 hours of recorded annual meeting content including poster presentations, purchase one of four 2020 ASH Annual Meeting webcast packages through ASH Academy On Demand. Learn more at www.hematology.org/meetings/annual-meeting/webcasts.

2020 Outstanding Abstract Achievement Awards

The ASH Outstanding Abstract Achievement Awards are provided to trainee abstract presenters with the highest scoring abstracts in each of the eligible categories (undergraduate student, medical student, graduate student, resident physician, and post-doctoral fellow). Recipients of these awards are reimbursed for their annual meeting travel in addition to receiving the honorarium.

*All abstracts are available for on-demand viewing on the virtual meeting platform (annualmeeting.hematology.org), or as part of the Blood Supplement (ashpublications.org/blood/issue/136/SupplementP.201).

UNDERGRADUATE STUDENT
Georgia Gregory, BS
University of California, San Francisco
Abstract 2601
Title: Investigating Zeta Globin Gene Expression to Develop a Potential Therapy for Alpha Thalassemia Major
112. Thalassemia and Globin Gene Regulation: Poster III

MEDICAL STUDENT
Yuting Yan
Peking Union Medical College
Abstract 279
Title: Genomic and Transcriptomic Profiling Reveals Distinct Subsets Associated with Outcomes in Mantle Cell Lymphoma
621. Lymphoma—Genetic/Epigenetic Biology: Genomic and epigenetic profiling of malignant lymphomas

GRADUATE STUDENT
Christian Marinaccio, MSc
Northwestern University
Abstract 1
Title: Loss of LKB1/STK11 Facilitates Leukemic Progression of the Myeloproliferative Neoplasms
Plenary Scientific Session

RESIDENT PHYSICIAN
Kylee Martens, MD
University of Washington School of Medicine
Abstract 137
Title: High-2-Low Risk Assessment Model to Predict Venous Thromboembolism in Allogeneic Transplant Patients after Platelet Engraftment
721. Clinical Allogeneic Transplantation: Conditioning Regimens, Engraftment, and Acute Transplant Toxicities I

POSTDOCTORAL FELLOW
Xianjiang Lan, PhD
Children’s Hospital of Philadelphia
Abstract 156
Title: ZNF410 Uniquely Activates the NuRD Component CHD4 to Silence Fetal Hemoglobin Expression
112. Thalassemia and Globin Gene Regulation
LEARN MORE ABOUT AN APPROVED TREATMENT FOR BPDCN
Blastic Plasmacytoid Dendritic Cell Neoplasm

VISIT OUR VIRTUAL BOOTH
2020 Update on Precision Medicine Initiatives

Precision medicine encompasses all approaches that use patient- and disease-specific information to prevent, diagnose, and treat a disease, and applying its principles to hematologic diseases is a priority for ASH. The use of genome sequencing and genomic profiling is expanding at a rapid pace, significantly improving the diagnoses and treatment of hematologic diseases by identifying unique variants that can be targeted with gene-based targeted therapeutic approaches.

The ASH Task Force on Precision Medicine is central to ASH’s activities around this priority area, and for the past three years, a central piece of the puzzle has been the Society’s partnership with the National Institutes of Health–funded Clinical Genome Resource (ClinGen). Two expert review panels, co-led by Drs. Lucy Godley and David Wu, and by Drs. Jorge Di Paola and Wolfgang Bergmeier have focused on hereditary predisposition to myeloid malignancies and hereditary platelet disorders, respectively.

The expert review panel focusing on germline variants implicated in myeloid malignancies made significant strides recently, publishing two papers on curation rules for RUNX1. The first (Luo X, et al. Blood Adv. 2019;3:2962-2979) gives details on the curation rules, and the second (Wu D, et al. Haematologica. 2020;105:870-887) shows how those rules are applied in the curation process. The panel deposited RUNX1 variant data curation into ClinVar, with the recognition of the U.S. Food and Drug Administration and is beginning the development of curation rules for GATA2, which started with adding experts on GATA2 deficiency to the panel. “The panel quickly realized,” said Dr. Godley, “that we need a detailed description of the GATA2 deficiency phenotype, which did not exist, so our panel is now working to define that.” The group also applied for NIH funding for the Myeloid Malignancy Variant Curation Expert Panel. In the year ahead, Dr. Godley remarked that the panel is looking forward to still more in the area of variant curation, including, “defining the GATA2 deficiency phenotype with data from patients across the world, finalizing GATA2 curation rules; curating RUNX1 and GATA2 variants in ClinVar, and starting to develop curation rules for more genes!”

Likewise, the expert review panel focusing on germline variants implicated in platelet disorders also had a successful year, zeroing in on Glanzmann thrombasthenia in the curation process. The group was given the task to curate germline variants in platelet disorder genes, in partnership with ClinGen, more than 2 years ago. In that time, they convened a working group of more than 25 members including clinicians, basic and translational scientists, genetic counselors, and professional curators that met at least monthly. “This group is highly diverse and represents many countries of the world,” said Dr. Di Paola. “We decided to start the curation process with Glanzmann thrombasthenia as it is caused by mutations in two genes (ITGA2B and ITGB3), is mostly inherited in a recessive manner, and has been extensive-ly studied.” After they determined the rule specification for both genes — a nontrivial task that took more than a year to complete — and received approval from the ClinGen Steering Committee, the panel started the pilot curation process and assigned pathogenicity (or not) to 70 variants. These findings are being submitted for publication. “We are proud of this work as we have set up the basis not only for the curation of all variants reported in these genes, but also for other genes involved in platelet disorders,” Dr. Di Paola remarked. “In the long term we hope that these efforts will help hematologists to better interpret clinical genetic panels and therefore improve diagnosis and treatment of platelet disorders.”

The task force’s Somatic Working Group has also made progress in 2020 with the development of an interactive table of somatic gene variants, which is available on the ASH website. As Dr. Torsten Hafer lach shared, today’s information is delivered by techniques such as next-generation sequencing. And as these techniques gain importance in diagnosis, prognostication, and treatment guidance, variant data have to be interpreted in order to be useful. “This is a tedious procedure as manual work is typically required to sift through multiple sources, thus quickly presenting a bottleneck,” said Dr. Haferlach. “Not all variants in a genome are pathogenic. Some are single-nucleotide polymorphisms...and some are classified as ‘variant of unknown significance’...”

The Somatic Working Group, an interdisciplinary team from six institutions, was formed to create a reliable resource for next-generation sequencing diagnostics in a systematic review process, and to make their consensus classification available to the wider hematology community. “We anticipate that this will lead to more homogeneity in molecular testing reports for patients undergoing evaluation of myeloid and lymphoid malignancies,” said Dr. Haferlach, noting that regular updates to the variant table will help hematologists use next-generation sequencing in their daily patient care routine. “It is mandatory that hematologists understand these new methods, increase the use of precision medicine approaches, and explore all options to patient care as soon as possible.”

To learn more the programs and activities supporting this research priority, visit the ASH website or email ashprecisionmedicine@hematology.org.

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Hematology Crossword Solution

| Metro | Papal |
| Satraps | Parries |
| Uneaten | Areolae |
| Nirvana | Nascent |
| Ulna | Fain |
| Urea |
| Plaid | Uncore |
| Rose |
| Allah | Aliment |
| Tableau |
| Clearly |
| Covid |
| Soil | Desk |
| Novel |
| Tubenato | Tote |
| Elector | Levered |
| Mortise | Arising |
| Smarted | Society |
| Blood | Sense |
**INDICATIONS AND USAGE:** Deferiprone is an iron chelator indicated for the treatment of patients with transfusional iron overload due to thalassemia syndromes when current chelation therapy is inadequate.

**Limitation of Use:** Safety and effectiveness have not been established for the treatment of transfusional iron overload in patients with other chronic anemias.

**IMPORTANT SAFETY INFORMATION**

**WARNING: AGRANULOCYTOSIS/NEUTROPENIA**
- Deferiprone can cause agranulocytosis that can lead to serious infections and death. Neutropenia may precede the development of agranulocytosis.
- Measure the absolute neutrophil count (ANC) before starting deferiprone therapy and monitor the ANC weekly on therapy. Interrupt deferiprone therapy if neutropenia develops.
- Interrupt deferiprone if infection develops, and monitor the ANC more frequently.
- Advise patients taking deferiprone to report immediately any symptoms indicative of infection.

**WARNINGS AND PRECAUTIONS**
If infection occurs while on deferiprone, interrupt therapy and monitor the absolute neutrophil count (ANC) more frequently.

Deferiprone can cause fetal harm. Women should be advised of the potential hazard to the fetus and to avoid pregnancy while on this drug.

**CONTRAINDICATIONS**
Hypersensitivity to deferiprone or to any of the excipients in the formulation.

**ADVERSE REACTIONS**
The most common adverse reactions are (incidence ≥ 5%) chromaturia, nausea, vomiting and abdominal pain, alanine aminotransferase increased, arthralgia and neutropenia.

**DRUG INTERACTIONS**
Avoid concomitant use with other drugs known to be associated with neutropenia or agranulocytosis; however, if this is not possible, closely monitor the absolute neutrophil count.
Allow at least a 4-hour interval between deferiprone and mineral supplements, and antacids that contain polyvalent cations (e.g., iron, aluminum, and zinc).

**USE IN SPECIFIC POPULATIONS**
Safety and efficacy of deferiprone have not been established in pediatric patients, geriatric patients, or patients with severe hepatic impairment.
Nursing mothers should discontinue use of deferiprone or discontinue nursing.

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PM-US-GEN-xxxx
With Time on Your Side, the Sky’s the Limit: ASH Research Training Award for Fellows

The ASH Research Training Award for Fellows (RTAF) is an award open to both MD and MD/PhD researchers between their second and fifth year of fellowship designed to encourage junior researchers in hematology, hematology/oncology, and other hematology-related programs to pursue careers in academic hematology. RTAF provides each recipient with $70,000 for a one-year period to guarantee protected time for clinical, basic, or translational research.

Andres Chang, MD, PhD, is an Instructor in the Department of Hematology and Medical Oncology at Emory University School of Medicine. His translational research focuses on PD-1 expression in chronic lymphocytic leukemia, and he has more than a dozen published articles to his name. Like many of his peers, Dr. Chang applied to RTAF to provide the support he needs to acquire the research training he needs to be successful, as well as acquire data for publications and subsequent grants. The phrase “protected time” (that is, having the ability focus strictly on one’s research endeavors) comes up often when discussing ASH career and training awards, and for Dr. Chang, that was definitely key. “Having good mentors and a significant amount of protected research time is essential for anyone aspiring to become a successful researcher. This becomes even more challenging for physicians because of clinical responsibilities that oftentimes limit the time available to conduct research,” he said. Dr. Chang also shared that RTAF has allowed him to learn and conduct new experiments, analyze data, and generate figures for presentations. For all this, he is grateful. “I have an immense feeling of gratitude towards ASH for trusting in me and supporting my career development.”

The application cycle is now open! Find additional information about RTAF including application requirements and key dates, visit the ASH website. Submit your application by January 2021.

ASH Congratulates the 2020 RTAF Winners

Albert Yeh, MD, University of Washington/Fred Hutchinson Cancer Research Center
Amy Lin, MD, PhD, Brigham and Women’s Hospital, Heart and Vascular Center
Andres Chang, MD, PhD, Emory University School of Medicine
Camille Edwards, MD, Boston University Medical Campus
Hana Lim, MD, MS, New York-Presbyterian Hospital/Weill Cornell Medical Center
Joselle Cook, MBBS, Mayo Clinic
Katherine Knorr, MD, PhD, Memorial Sloan Kettering Cancer Center/Rockefeller University
Kelly Schoenbeck, MD, The Regents of the University of California, San Francisco

Kirsty Hillier, MD, Dana-Farber Cancer Institute
Michael Leukam, MD, MS, Beth Israel Deaconess Medical Center
Ramzi Abboud, MD, Washington University School of Medicine
Shawn Sarkaria, MD, Columbia University Medical Center
Charity Oyedeji, MD, Duke University Medical Center
Christina Caruso, MD, Emory University School of Medicine
Eugene Khandas, MD, PhD, Children’s Hospital of Philadelphia
Peter Miller, MD, PhD, Dana-Farber Cancer Institute

CLASSICAL

and nutritional deficiencies have many hematologic consequences. Iron deficiency (ID), the most common nutritional deficiency in the world, is incredibly common in pregnancy (with 77% of North American pregnant women affected) and is associated with poor maternal and fetal outcomes. Dr. Jennifer Teichman presents on this important topic in the oral session “Suboptimal Iron Deficiency Screening in Pregnant Women in a High Resource Setting.” (This was also spotlighted in Dr. Alisa Wolberg’s roundup of nonmalignant themes in the Best of ASH session.)

In a study of more than 47,000 (!) pregnancies, less than 60 percent of patients had ferritin levels evaluated; of those, more than half had ID, with almost a quarter being severely affected. Although only 8.3 percent of the women were anemic, only 27 percent had ferritin evaluated following the anemia diagnosis. Despite the fact that iron deficiency is associated with lower socioeconomic status (SES), the authors found that lower SES status was associated with reduced odds of screening. I applaud the authors in advocating for universal screening to address this important health equity issue.

Whether you call it classical, nonmalignant somewhat-benign (copyright Dr. Ma), complex (copyright Dr. Sholzberg), or just reclaim “hematology” alone (the others can right Dr. Sholzberg), or just reclaim “hematology” alone (the others can have “oncology”), there is lots of work to be done and so much fun to be had!

“Based on all the exciting sessions at the 2020 ASH Annual Meeting, it is clear that classical hematology is anything but stodgy.”

~Dr. Angela Weyand

ACKNOWLEDGEMENT OF SUPPORT — ASH RESEARCH RESTART AWARD

The ASH Foundation is grateful to the following for their generous support of the ASH Research Restart Award:

Bristol-Myers Squibb
GlaxoSmithKline
Novartis
Gamida Cell

The ASH Research Restart Award provides seed funding to reduce the impact that the global COVID-19 pandemic has had on the progression of research and careers for early-career investigators in hematology. ASH deeply appreciates its valued corporate donators for joining in this critical endeavor.

ASH AWARDS

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2021 Highlights of ASH®

The 2021 Highlights of ASH meetings will be an all-virtual experience.

ASH is excited to share additional information in the coming weeks, but the regional meetings originally scheduled to take place in North America (January), the Mediterranean (February), Asia-Pacific (March), and Latin America (April) will be offered as a collective virtual experience in March 2021. More information about the program and registration will be available in early 2021.

Detailed information and documents regarding exhibits and other sponsorship opportunities will be available in the coming weeks.

Stay up-to-date with meeting developments and learn more at www.hematology.org/highlights.
ASH and IPIG Present Abstract Achievement Award in Paroxysmal Nocturnal Hemoglobinuria

The International Paroxysmal Nocturnal Hemoglobinuria Interest Group (IPIG) is dedicated to enhancing and expanding professional knowledge about paroxysmal nocturnal hemoglobinuria (PNH) and related disorders in order to improve patient treatment and care. ASH and IPIG have partnered to create the ASH-IPIG Abstract Achievement Award. The award is granted to up to two trainees (undergraduate student, medical student, graduate student, resident physician, or post-doctoral [MD or PhD] fellow) who are the first or senior author and presenter of the most meritorious PNH-focused abstracts submitted in the fields of red cells and erythropoiesis or bone marrow failure. Please join us in congratulating this year’s winners, Carmelo Gurnari, MD, and Noriaki Tsuji, MD.

Carmelo Gurnari, MD
Cleveland Clinic
Abstract 2577
Title: Implication of Piga Genotype on Clinical Features of PNH

Noriaki Tsuji, MD
Kanazawa University
Abstract 933
Title: Epigenetic Loss of the HLA-DR15 Expression on Hematopoietic Stem Progenitor Cells in Patients with Acquired Aplastic Anemia Characterized By Cyclosporine Dependency: A Novel Mechanism Underlying the Immune Escape of Hematopoietic Stem Progenitor Cells
Session: 508. Bone Marrow Failure: Poster I

*All abstracts are available for on-demand viewing on the virtual meeting platform (annualmeeting.hematology.org), or as part of the Blood Supplement (ashpublications.org/blood/issue/136/Supplement%201).

Explores our virtual booth at OncopeptidesBooth.com

Oncopeptides was established solely to develop therapies for difficult-to-treat hematological diseases, and we are committed to bringing patients the treatments they need and the hope they deserve.
2020 ASH Annual Meeting Education Supporters
ASH would like to acknowledge the following companies for the educational grants provided in support of the 2020 ASH Annual Meeting:

HEMATOLOGY 2020: THE EDUCATION PROGRAM

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Pfizer, Inc.
Seagen
Could redirecting the immune response change the treatment course of RRMM?\textsuperscript{7,8}

Find out more at ChallengingRRMM.com

For patients who have been exposed to an immunomodulatory agent, a proteasome inhibitor, and an anti-CD38 antibody, disease control is often limited, as deep and durable responses are less likely.\textsuperscript{1-6}