NHLBI-FUNDED STUDY SHOWS IRON SUPPLEMENTATION AFTER BLOOD DONATION SHORTENS HEMOGLOBIN RECOVERY TIME

A National Institutes of Health-funded study comparing low dose iron supplementation to no supplementation in blood donors found that supplementation significantly reduced the time to recovery of post-donation lost iron and hemoglobin—an iron-rich protein that carries oxygen in red blood cells throughout the body.

The results of the Hemoglobin and Iron Recovery Study (HEIRS), supported by NIH’s National Heart, Lung, and Blood Institute (NHLBI), appeared Feb. 10 in the Journal of the American Medical Association.

Blood donors are allowed to give one pint of blood every eight weeks. A major concern is that about 25-35 percent of regular donors develop iron deficiency. Since iron is needed for red blood cell production, low iron can cause fatigue and anemia—a condition in which the blood has a lower than normal number of red blood cells—and can lead to temporary ineligibility for future donations. It can take months to recover the lost iron. New research indicates a possible solution.

“This research brings us another step closer to understanding how to maintain healthy iron levels in blood donors. Maintaining healthy iron levels will allow donors to safely continue donating thereby ensuring a robust blood supply for patients in need,” said Simone Glynn, M.D., M.S.c, M.P.H., chief of the Blood Epidemiology and Clinical Therapeutics Branch at NHLBI.

The randomized trial ran from April 2012 to December 2012 at four blood centers in the United States and included 215 blood donors aged 18 and older. The study was conducted by the NHLBI-supported Recipient Epidemiology and Donor Evaluation Study-III (REDS-III), a large, multicenter research program that seeks to optimize health outcomes in donors and transfusion recipients and to help ensure the safety and availability of transfused blood products in the United States and internationally.

The study measured the effect of low dose daily iron supplementation on the time to recovery of lost hemoglobin and iron after donating a unit of blood. Participants included 136 females (63 percent) and 79 males (37 percent); 52 donors (24 percent) were 60 years or older. Although all were blood donors, none had donated blood in the last four months.


"This research brings us another step closer to understanding how to maintain healthy iron levels in blood donors... thereby ensuring a robust blood supply for patients in need.”

SPECIAL UPDATES:

BIO SURVEY ON FDA/SPONSOR INTERACTIONS

BIO’s first-of-its-kind survey to measure FDA-sponsor communications launched last fall, and recently conducted an interim data pull to take a preliminary look at the responses on key issues. Participants in the survey were invited to a webinar previewing this preliminary data—and to hear FDA’s reaction to the survey responses. You can view select slides from the webinar by clicking here.

Survey participants have exclusive access to survey data, participant-only webinars, regulatory tips, and FDA insights. Please join your industry peers by signing up at fdasurvey.bio.org and provide your feedback before our next data pull in May.
**UPDATES FROM NCATS**

On January 26, 2015, NCATS announced the winners of the Toxicology in the 21st Century (Tox21) Data Challenge 2014, a crowdsourcing competition that attracted contestants from 18 countries to design computational models to better predict chemical toxicity. Tox21 is a collaborative effort among NCATS and the National Institute of Environmental Health Sciences, EPA, and FDA to improve current methods scientists use to evaluate environmental chemicals and develop new medicines. Challenge participants used data from nuclear receptor signaling and stress pathway assays (tests) run against Tox21’s 10,000-compound library to build models and look for structure-activity relationships. The models from the seven winning teams will become part of the Tox21 program’s arsenal of tools that help researchers assess how various chemicals might disrupt biological processes in the human body and lead to negative health effects. All displayed very good predictive power, achieving greater than 80 percent accuracy, with several models exceeding 90 percent accuracy. Combining these models with the knowledge already gained from Tox21 screening data can help scientists better prioritize chemicals for further toxicological testing, saving both time and money. For more information on the Tox21 program or to see a list of the winners, please click [here](#).

On June 17-18, 2015, the NIH will hold a joint meeting of the NCATS Advisory Council and Cures Acceleration Network (CAN). This meeting will feature reports from NCATS Director Christopher P. Austin, M.D., and others about the Center’s initiatives, policies, programs and future direction. For more information, please click [here](#).

**Upcoming Meetings**

**Cardiovascular and Renal Drugs Advisory Committee**

- **April 15-16, 2015**
- **May 15, 2015**

**Blood Products Advisory Committee**

- **May 13, 2015**

**PULMONARY-ALLERGY DRUGS ADVISORY COMMITTEE & DRUG SAFETY AND RISK MANAGEMENT ADVISORY COMMITTEE**

On March 19, 2015, the Pulmonary-Allergy Drugs Advisory Committee and the Drug Safety and Risk Management Advisory Committee held a joint meeting to discuss the supplemental new drug application (sNDA) 204275-S001, for fluticasone furoate and vilanterol inhalation powder (tradename Breo Ellipta) submitted by GlaxoSmithKline for the once daily maintenance treatment of asthma in patients 12 years of age and older. The discussion included efficacy data, but the focus of the meeting was safety, including the adequacy of the safety database to support approval, and whether a large safety trial to evaluate serious asthma outcomes is recommended.

For more information on this meeting including an agenda and briefing materials, please click [here](#).

**BLOOD PRODUCTS ADVISORY COMMITTEE**

On December 2, 2014, the Committee met in open session to hear scientific data related to reconsideration of the current blood donor deferral policy for men who have had sex with another man (MSM) even one time since 1977. The Committee was presented with an update on the November 13, 2014, meeting of the U.S. Department of Health and Human Services Advisory Committee on Blood and Tissue Safety and Availability where the MSM blood donor deferral policy will be discussed. In the afternoon, the Committee heard an informational presentation on Ebola virus, the potential implications for blood safety in the United States and FDA’s considerations on the collection of convalescent plasma for investigational use.

On December 3, 2014, the Committee was seated as a device classification panel. In open session, the panel discussed the appropriate device classification of blood establishment computer software (BECs) and accessories to BECS. Blood establishment computer software is currently subject to the premarket notification (510(k)) provisions of the Federal Food, Drug, and Cosmetic Act. In the afternoon, an informational presentation was made regarding the emergence of chikungunya virus infections in the Western Hemisphere and potential implications for blood transfusion safety. The Committee also heard an informational presentation on the first survey of the Rapid Donor Surveillance (RapidDOS) project on Middle Eastern Respiratory Syndrome coronavirus (MERS-CoV).

For more information on this meeting, click [here](#).

**CARDIOVASCULAR AND RENAL DRUGS ADVISORY COMMITTEE**

On October 30, the committee discussed new drug application (NDA) 206316, edoxaban tablets, submitted by Daiichi Sankyo, Inc., for the prevention of stroke and systemic embolism (blood clots other than in the head) in patients with nonvalvular atrial fibrillation.

For more information on this meeting including meeting minutes, please click [here](#).
Polyketal Nanoparticle Delivery of CpG Oligodeoxynucleotide for Treatment of Lung Cancer
This technology delivers oligodeoxynucleotide locally to lung tumors using polyketal nanoparticles. CpG ODNs (oligonucleotides with CpG motifs) stimulate anti-tumor immune cells via Toll-like receptor 9 and show promise as cancer therapeutics in preclinical and clinical trials. However, previous systemic CpG ODN treatments of lung tumors progressed only to Phase 3 trials. Local CpG ODN delivery appears to have superior antitumor effect compared to earlier systemic treatments. Adsorbing CpG ODNs onto biodegradable polyketal (CpG-NP) creates 1 -3 micron nanoparticles that can reach distal alveoli by inhalation.

This localized treatment improves uptake and persistence in the tumor microenvironment, resulting in decreased immunosuppressive T-Cells and increased macrophages. In vivo data indicate this therapy reduces tumor growth and enhances survival rate in lung cancer. Mice treated with CpG-NP had fewer and smaller tumor nodules (reduced by >90%). In Lewis lung carcinoma model, CpG-NP therapy significantly improved the survival; 80% of CpG-NP-treated mice survived (some for >1 yr). CpG-NP represents a promising potential lung cancer therapy.

Octopod (8-pointed star-shape) Iron Oxide Nanoparticles Enhance MRI T2 Contrast
The octopod-shaped iron oxide nanoparticles of this technology significantly enhance contrast in MRI imaging compared to spherical superparamagnetic iron oxide nanoparticle $T_2$ contrast agents. These octopod iron oxide nanoparticles show a transverse relaxivity that is over five times greater than comparable spherical agents. Because the unique octopod shape creates a greater effective radius than spherical agents, but maintains similar magnetization properties, the relaxation rate is improved. The improved relaxation rate greatly enhances the contrast of images. These octopod agents appear to be bio-compatible and may be suitable for intravenous delivery. The synthesis of these agents is also easily reproducible and scaled. The superior contrast greatly improves diagnostic sensitivities, compared to current FDA approved spherical contrast agents. These octopod-shaped iron oxide nanoparticle $T_2$contrast agents may have a number of medical imaging uses, such as tumor detection, atherosclerosis imaging and delivery of therapeutic treatments.

To learn more about these technologies and to find others available for licensing, please click here.

PATIENT ORGANIZATION EVENTS

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Click here for more details.
BIO’s Survey Tool on FDA/Sponsor Interactions During Drug Development: Best Practices

BIO recently launched its new survey designed to measure FDA/Sponsor Interactions During Drug Development. After the preliminary data webinar in January, BIO staff had conversations with survey participants and the FDA to determine how to ensure that the survey produces significant data that can support BIO’s policy efforts. To that end, BIO has made suggested changes to system to make it easier to navigate and has developed a list of five best practices to help you complete your phase-specific journals in an effective manner.

1. **Please complete all available journals for each program.** You can fill in data for a program’s current phase of development and all previous phases of development. BIO strongly encourages you to provide as much data as possible.

2. **Please provide comments as often as possible.** The very/not very beneficial ratings are only a starting point. Your color commentary about why you rated an interaction favorably/unfavorably will help us better inform FDA. Also, feel free to provide comparative information about your previous interactions with FDA and how your current interactions compare.

3. **Don’t worry about being repetitive.** Your answers will be aggregated with other participants’ answers, so a late-in-survey comment that refers to one of your earlier comments may miss its intended impact. Don’t be hesitant to repeat information – you can even copy/paste an old answer!

4. **Please rate the communication methods.** Many respondents skipped questions rating and comparing emails, formal letters, in-person meetings, etc. The FDA has expressed strong interest in understanding how these communication methods facilitate interactions with drug sponsors, so please provide ratings and comments if at all possible.

5. **Evaluate your review division.** One of the goals of the survey is to compare and contrast communications practices by review division. As you enter feedback, please provide any division-specific comments.

To learn more about BIO’s first-of-its-kind survey, click [here](#). To access BIO’s survey or register, click [here](#).

**Sens. Toomey, Menendez, Roberts, & Carper Introduce the Start-up Jobs and Innovation Act**

On February 3, Sens. Pat Toomey (R-PA), Robert Menendez (D-NJ), Pat Roberts (R-KS), and Tom Carper (D-DE) introduced S. 341, the Start-up Jobs and Innovation Act. The bill would modernize the U.S. tax code to encourage the private sector to invest in breakthrough research being conducted at growing biotechs and other innovative small businesses across the country.

Specifically, the legislation would relax the passive activity loss (PAL) limitations for R&D-focused pass-through entities. Under this bill, small innovative companies would be able to enter into a joint venture with an R&D project’s investors via R&D Partnership Structures. The losses and credits generated by the project would then flow through to the company and investors, who would be able to use the tax assets to offset other income.

The Start-up Jobs and Innovation Act also includes important reforms to the capital gains treatment of small business stock, as well as business expensing for growing companies and rules governing small firm accounting methods. In addition to making the permanent the provision in Section 1202 that allows investors to exclude from taxation 100% of their gain from the sale of qualified small business (QSB) stock held for at least five years, the bill would change the QSB definition by raising the gross assets limit to $150 million.

To learn more about the Start-up Jobs and Innovation Act, please click [here](#).

**Sens. Carper and Toomey Introduce the COMPETE Act**

On February 26, Senators Tom Carper (D-DE) and Pat Toomey (R-PA) introduced S. 537, the COMPETE Act. This bill would stimulate capital formation for growing innovative businesses and speed the development of groundbreaking technologies.

The COMPETE Act would relax the Section 469 passive activity loss limitations for R&D-focused pass-through entities. Relaxing the PAL rules to allow investors to enjoy a more immediate return on their investment, despite the long and risky timeline usually associated with groundbreaking research, would incentivize them to invest at an earlier stage, when the capital is most needed. Additionally, the COMPETE Act would also make permanent the R&D Tax Credit with an increased ASC rate.

To learn more about the COMPETE Act, please click [here](#).
BIO RELEASES VENTURE FUNDING STUDY

On February 9, BIO released a first-of-its-kind study on venture financing broken down by disease area and novelty of research over a ten-year period from 2004 to 2013. The report analyzes data from four venture capital databases – Thomson Reuters, BioCentury, Elsevier, and Evaluate Pharm – to investigate investor trends, examine investment in specific therapeutic areas and indications, and identify disease areas that might be struggling for early-stage venture equity financing. The study encompasses $38 billion of venture capital into more than 1,200 U.S. drug companies, receiving more than 2,000 rounds of funding over the last 10 years.

Key findings include:
- Seventy-eight percent of U.S. venture investment for therapeutics went toward novel drug R&D, suggesting innovation is a core priority for venture investors
- Total venture funding of drug R&D dropped 21 percent, from $21.5 billion to $16.7 billion, comparing five-year periods before and after the recent financial crisis (2004-2008 vs. 2009-2013)
- Disease areas affecting large populations – Diabetes, Psychiatry, Gastrointestinal, Respiratory, Cardiovascular – have seen a decline in novel drug R&D venture funding
- Rare disease funding has seen a large increase over the past decade in terms of both dollars raised and number of companies funded
- There are fewer first-time Series A financings in recent years, down 30 percent from a peak in 2006, but higher dollar amounts for novel drug R&D venture funding

BIO has begun work on an updated Venture Capital report, which will incorporate recent 2014 data. Planned release for this version is June 2015 at the BIO Convention in Philadelphia.

To access a copy of BIO’s venture funding study, please click here.

BIO COMMENTS ON PROPOSED TICK SIZE PILOT PROGRAM

Last Fall, the national securities exchanges (Nasdaq, NYSE, etc.) proposed a pilot program to measure the effects of tick size flexibility on small cap stocks. On December 22, 2014, BIO submitted a comment letter to the SEC praising the pilot proposal but imploring the SEC to extend it for longer than one year. BIO has long been a supporter of increased trading increments for growing companies on the market, and we believe the proposed pilot is an important step forward. The exchanges and the SEC will now review the comments received and eventually begin implementing the pilot. Eligibility for the pilot will be limited to companies with a market cap below $5 billion and an average daily trading volume of less than 1 million shares per day. The pilot will test the impact of a $0.05 tick (an increase from the existing $0.01) on these stocks.

To learn more about the forthcoming tick size pilot program, click here.

HOUSE PASSES JOBS 2.0 PACKAGE

On January 14, the House of Representatives passed a package of financial services legislation designed to be a job-creating follow-up to the JOBS Act. The Promoting Job Creation and Reducing Small Business Burdens Act (H.R. 37) includes several individual bills that have passed either the Financial Services Committee or the full House on a bipartisan basis. Chief among these is the Small Company Disclosure Simplification Act, which would create a small company XBRL exemption. BIO is a strong supporter of an XBRL exemption for small businesses.

To learn more about this legislation, click here.

CARDIOLOGY/PULMONOLOGY/BLOOD-FOCUSED LEGISLATION

S. 436—Supporting Athletes, Families and Educators to Protect the Lives of Athletic Youth Act
This bill would require the CDC to: (1) expand, intensify, and coordinate its activities regarding cardiac conditions, concussions, and heat-related illnesses among youth athletes; and (2) report on fatalities and catastrophic injuries among youths participating an athletic activities.
- Sponsor: Sen. Robert Menendez (D-NJ)
- Status: Referred to the Senate Committee on Health, Education, Labor, and Pensions

H.R. 531—Accelerating Biomedical Research Act
This bill would amend the Balanced Budget and Emergency Deficit Control Act of 1985 to prioritize funding for the NIH to discover treatments and cures, to maintain global leadership in medical innovation, and to restore the purchasing power the NIH had after the historic doubling campaign that ended in fiscal year 2003.
- Sponsor: Rep. Rosa DeLauro (D-CT-3)
- Status: Referred to the House Committee on the Budget
Researchers separated the blood donors into two groups based on their iron levels: a lower iron and a higher iron group. Half of each group was randomized to take one tablet of ferrous gluconate (38 mg of low dose iron) daily for 24 weeks following their blood donation. Hemoglobin and iron levels were measured seven times during the study. Compared to donors who did not take iron, the donors taking iron supplements returned to predonation hemoglobin levels faster in both the lower iron (five weeks versus 23 weeks) and higher iron groups (four weeks versus 11 weeks). Similarly, donors taking iron supplements recovered lost iron more rapidly than those not receiving supplements (11 weeks versus more than 24 weeks). Without iron supplementation, two thirds of the donors did not recover the iron lost from donating blood after 24 weeks.

“The NHLBI is supporting additional research to address questions such as who benefits most from iron supplementation, how much iron should be taken, and for how long. This research can help encourage blood centers to evaluate best strategies on how to help donors maintain iron levels and prompt all donors to discuss iron supplementation with their physician,” concluded Dr. Glynn.

For more information, please click here.