Office of Education
Division of Intramural Research

Fellows Newsletter

December 2015

In This Issue:

The Fellows Newsletter is published monthly by the Office of Education, Division of Intramural Research, National Heart, Lung, and Blood Institute and distributed to NHLBI DIR members to promote the interest of DIR Fellows.

Office of Education, NHLBI DIR
Herbert M. Geller, Ph.D., Director
Dami Kim, Program Coordinator
Jackie Lee, Program Coordinator

Newsletter Writers
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From the Director of the Office of Education

As this year is winding down, the Office of Education and the Fellows Advisory Committee are preparing for 2016. On page 5, you'll find the schedule of the Career Development Series, which provide the opportunity to meet and interact with professionals in a variety of fields. Mark your calendar for Research Day on Friday, April 29, 2016, with abstract submissions beginning on Tuesday, March 1. Finally, the staff of the Office of Education wishes you all a Happy Holidays and a healthy and successful New Year.

Director's Column

Survival Strategies
By Dr. Herbert Geller

The German philosopher Friedrich Nietzsche opined "That which does not kill us makes us stronger." While there is some truth to this adage, not every negative experience leads to knowledge and success, especially during a period of scientific research training. If this is true, it becomes essential to understand which experiences can become lethal and which can have a positive outcome. Moreover, equivalent situations may have different outcomes depending upon your response.

One situation, which is all too common, is the postdoctoral fellow who is nearing their time limit at NHLBI and finds that they have no first-author publications. For a fellow whose desired career is to lead their own research group, this is difficult, but not impossible, to survive. Academic search committees are laser-

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Director's Column

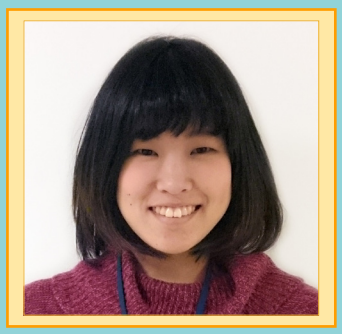
focused on selecting faculty whose research is going to make a difference, but also are looking out for candidates who will bring in grant money. And they know that grant review committees expect to see not only a great research proposal, but also a history of publications. So what's such a fellow to do? One option is to begin to think about a different career path. A second is to move to another lab, preferably one where postdocs publish first-author papers in a relatively short time. While this second option may entail some risk, if a postdoc comes into that lab with a clear sense of what their independent project will be, they may find that they can get the preliminary data they need while also producing publications. A third option, which may work in the situation where PIs only publish in "single-name" journals, is to try to stay as long as it takes to become a first author. However, because we have a time limit of five years here, this last choice is very high-risk.

Another scenario is one in which the fellow arrives in the lab and finds that the lab environment is toxic, based on either interpersonal interactions or lab culture. In this case, early action can be critical in ensuring survival. If the conflict is with other members of the lab, the first action is to talk to the PI with your concerns. Most PIs will be sensitive to these issues and can take actions to improve the situation. If the conflict is with the PI, or the PI seems insensitive, they are unlikely to change the climate. The best strategy in this situation is to find a new position as soon as possible. Keep in mind that potential new mentors will want references, and may even contact your current PI without them being listed.

A scenario with almost all happy endings is one in which you discover that lab research is no longer rewarding, and that coming to the lab is more of a chore than a pleasure. There are lots of careers that take advantage of your research training straight away, including consulting, scientific technical support, and scientific administration. Others, such as patent law or tech transfer, may require further training.

For any of these situations, the Office of Education is available to offer advice and suggestions as to the best route to success. ■

Meet the New Fellows



Haruna Nagase is a new Predoctoral Fellow in the Cell Biology and Physiology Center under Dr. Herbert Geller. She is earning a Master's degree in Biomolecular Science at Gifu University, Japan, where she is also a teaching assistant. Haruna has also previously instructed junior high school students at a cram school in various subjects. Her career goal is to become a researcher in the medicine manufacturing industry.

The Science Beat by Delon Wilson

Nguyen, K. L., Alam, S., Tian, X., Mehari, A., **Leung, S. W.,** Seamon, C., Allen, D., Minniti, C. P.,Sachdev, V., Arai, A. E., & Kato, G. J. (2015). Elevated Transpulmonary Gradient and Cardiac Magnetic Resonance-DerivedRight Ventricular Remodeling Predict Poor Outcomes in Sickle Cell Disease. *Haematologica*. haematol

Pulmonary hypertension (PH) is a frequent and severe complication of chronichemolytic anemia, including sickle cell disease (SCD). The reported prevalence of PH in SCD is 6-11% which is higherthan seen in patients with other diseases with pulmonary complications such as scleroderma or HIV. Further, inSCD PH is often complicated by concurrent left ventricular (LV) diastolic dysfunction as well as anemia-induced hemodynamic changes. Measurement of the pulmonary vascular resistance (PVR) is the conventional index of pulmonary vascular pathology; however it is confounded by anemia-related hemodynamic adaptations. The pressure differential developed across the pulmonary circulation, the transpulmonary gradient (TPG), which can be obtained during right heart catheterization (RHC) is less affected in this manner. In previous studies the authors have demonstrated increased mortality associated with elevated TPG, but the question of how increased TPG is associated functional capacity had not been addressed. Other groups have reported on the morphologic cardiac manifestations of sickle cell associated cardiomyopathy and left ventricular (LV) systolic dysfunction, but the territory concerning the relationship between TPG and right ventricular remodeling using invasive hemodynamics in concert with cardiac magnetic resonance imaging (CMR) was uncharted.

The authors therefore conducted a hypothesis-generating analysis to evaluate the relationship between TPG and RV remodeling using data derived respectively from 84 patients SCD patients who underwent RHC and a subset of 44 who underwent CMR within two days of RHC.

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Meet the New Fellows

Jessica Iyer is a new Postbaccalaureate Fellow under Dr. Adrian Wiestner in the Hematology Branch. She earned her Bachelor of Science in Human Biology, Health & Society from Cornell University, where she was also a teaching and research assistant. Jessica has also conducted field research at the South African Institute for Policy and Research in Zambia, and was a summer intern at the Sidney Kimmel Comprehensive Cancer Center in Baltimore. After her fellowship, she wishes to pursue medical school, and eventually work in the field as a public health physician.

The Science Beat by Delon Wilson (Cont'd)

In addition, they explored the significance of using a TPG threshold, and evidence of RV dysfunction to identify patients with overall poor outcomes.

Univariate analyses showed TPG>/= 12mmHg and right ventricular ejection fraction (RVEF) <32% were significant predictors of poor survival. After controlling for age and phenotype, TPG >/=12 mmHg and RVEF <32% remained independently predictive of increased mortality. They found that a TPG >/= 12mmHg indentified SCD patients with a lower than expected cardiac index (CI) and hemodynamics consistent with ventricular interdependence. From CMR data, patients with TPG>/=12 demonstrated higher prevalence of late gadolinium enhancement (LGE) at the right ventricular insertion point (RVIP) in addition to abnormal indices of ventricular remodeling including increased ventricular mass index, increased septal- marginal trabeculae (SMT) mass index, and decreased end-diastolic septal-to-LV free wall curvature ratio. Elliptical distortion was also observed as indicated by an elevated end systolic LV eccentricity index in those with high TPG. Their results showed a significant negative correlation between RVEF and TPG. In functional capacity investigations, RV dysfunction was associated with higher New York Heart Association (NYHA) classifications, and shorter 6-minute walk distance (6-MWD). Finally they observed a trend of increased mortality in patients with an LV end diastolic volume index (LVEDI) </= 115mL/m2, RV EDVI>/=84 mL/m2 or RV mass index >/= 34 g/m2.

By classifying patients using TPG versus the traditional pulmonary hypertension parameters the authors were able to identify those with low CI despite normal LVEF and those with poor functional capacity, which was not possible in previous studies that used traditional measures of pulmonary hypertension. The predictive power of the study is somewhat limited by the fact that only about half of the 84 RHC patient underwent CMR and the authors thus caution their results should be interpreted as hypothesis generating more so than definitive conclusions. Additionally, patient classification by TPG level should not be confused with the more traditional classification by PH, and the findings should be interpreted in this context. For further studies, they suggest adopting their approach to a larger cohort, using RV adaptation along with TPG and other hemodynamic parameters to guide prognostication in SCD. Overall, their findings suggest that RV physiology and morphology may have significant prognostic implications in patients with SCD. ■

Recent Publications by NHLBI Fellows

Campbell-Washburn, A. E., Faranesh, A. Z., Lederman, R. J., & Hansen, M. S. (2015). Magnetic Resonance Sequences and Rapid Acquisition for MR-Guided Interventions. Magn Reson. Imaging Clin. N. Am. 23, 669-679.

Chen, J., Bryant, M. A., **Dent, J. J.**, Sun, Y., **Desierto, M. J.**, & Young, N. S. (2015). Hematopoietic lineage skewing and intestinal epithelia degeneration in aged mice with telomerase RNA component deletion. Exp. Gerontol. 72:251-60. doi: 10.1016/j.exger.2015.10.016. Epub@2015 Oct 30., 251-260.

Cheng, L., Pisitkun, T., Knepper, M. A., & Hoffert, J. D. (2016). Peptide Labeling Using Isobaric Tagging Reagents for Quantitative Phosphoproteomics. Methods Mol. Biol. 1355:53-70. doi: 10.1007/978-1-4939-3049-4_4., 53-70.

Eicher, J. D., Xue, L., Ben-Shlomo, Y., Beswick, A. D., & Johnson, A. D. (2015). Replication and hematological characterization of human platelet reactivity genetic associations in men from the Caerphilly Prospective Study (CaPS). J. Thromb. Thrombolysis.

Ida, C., **Yamashita, S.**, Tsukada, M., Eguchi, T., Tanaka, M., Ogata, S., Fujii, T., Nishi, Y., Ikegami, S., Moss, J., & Miwa, M. (2015). An enzyme-linked immunosorbent assay-based system for determining the physiological level of poly(ADP-ribose) in cultured cells. Anal. Biochem. 10.

Li, H., Liu, W., Chen, W., **Zhu, J.**, Deng, C. X., & Rodgers, G. P. (2015). Olfactomedin 4 deficiency promotes prostate neoplastic progression and is associated with upregulation of the hedgehog-signaling pathway. Sci. Rep. 5:16974. doi: 10.1038/srep16974., 16974.

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Recent Publications by NHLBI Fellows

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Nguyen, K. L., Alam, S., Tian, X., Mehari, A., **Leung, S. W.**, Seamon, C., Allen, D., Minniti, C. P., Sachdev, V., Arai, A. E., & Kato, G. J. (2015). Elevated Transpulmonary Gradient and Cardiac Magnetic Resonance-Derived Right Ventricular Remodeling Predict Poor Outcomes in Sickle Cell Disease. Haematologica. haematol.

Peters, M. J., **Joehanes, R.**, Pilling, L. C., Schurmann, C., Conneely, K. N., Powell, J., Reinmaa, E., Sutphin, G. L., Zhernakova, A., Schramm, K., Wilson, Y. A., Kobes, S., Tukiainen, T., Ramos, Y. F., Goring, H. H., Fornage, M., Liu, Y., Gharib, S. A., Stranger, B. E., De Jager, P. L., Aviv, A., Levy, D., Murabito, J. M., Munson, P. J., Huan, T., Hofman, A., Uitterlinden, A. G., Rivadeneira, F., van, R. J., Stolk, L., Broer, L., Verbiest, M. M., Jhamai, M., Arp, P., Metspalu, A., Tserel, L., Milani, L., Samani, N. J., Peterson, P., Kasela, S., Codd, V., Peters, A., Ward-Caviness, C. K., Herder, C., Waldenberger, M., Roden, M., Singmann, P., Zeilinger, S., Illig, T., Homuth, G., Grabe, H. J., Volzke, H., Steil, L., Kocher, T., Murray, A., Melzer, D., Yaghootkar, H., Bandinelli, S., Moses, E. K., Kent, J. W., Curran, J. E., Johnson, M. P., Williams-Blangero, S., Westra, H. J., McRae, A. F., Smith, J. A., Kardia, S. L., Hovatta, I., Perola, M., Ripatti, S., Salomaa, V., Henders, A. K., Martin, N. G., Smith, A. K., Mehta, D., Binder, E. B., Nylocks, K. M., Kennedy, E. M., Klengel, T., Ding, J., Suchy-Dicey, A. M., Enquobahrie, D. A., Brody, J., Rotter, J. I., Chen, Y. D., Houwing-Duistermaat, J., Kloppenburg, M., Slagboom, P. E., Helmer, Q., den Hollander, W., Bean, S., Raj, T., Bakhshi, N., Wang, Q. P., Oyston , L. J., Psaty, B. M., Tracy, R. P., Montgomery, G. W., Turner, S. T., Blangero, J., Meulenbelt, I., Ressler , K. J., Yang, J., Franke, L., Kettunen, J., Visscher, P. M., Neely, G. G., Korstanje, R., Hanson, R. L., Prokisch, H., Ferrucci, L., Esko, T., Teumer, A., van Meurs, J. B., Johnson, A. D. (2015). The transcriptional landscape of age in human peripheral blood. Nat. Commun. 6:8570. doi: 10.1038/ncomms9570., 8570.

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Sun, N., **Yun, J.**, Liu, J., Malide, D., Liu, C., Rovira, I. I., **Holmstrom, K. M.**, Fergusson, M. M., Yoo, Y. H., Combs, C. A., & Finkel, T. (2015). Measuring In Vivo Mitophagy. Mol. Cell. 60, 685-696.

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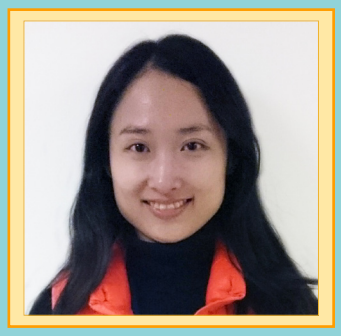
Vaisman, B. L., **Vishnyakova, T. G.**, Freeman, L. A., Amar, M. J., Demosky, S. J., Liu, C., Stonik, J. A., Sampson, M. L., Pryor, M., Bocharov, A. V., Eggerman, T. L., Patterson, A. P., & Remaley, A. T. (2015). Endothelial Expression of Scavenger Receptor Class B, Type I Protects against Development of Atherosclerosis in Mice. Biomed. Res. Int. 2015:607120. doi: 10.1155/2015/607120. Epub@2015 Oct 4., 607120.

Yahiro, K., Hirayama, T., Moss, J., & Noda, M. (2015). Helicobacter pylori VacA toxin causes cell death by inducing accumulation of cytoplasmic connexin 43. Cell Death. Dis. 6:e1971. doi: 10.1038/cddis.2015.329., e1971.

Yin, X., Levy, D., **Willinger, C.**, Adourian, A., & Larson, M. G. (2015). Multiple imputation and analysis for high-dimensional incomplete proteomics data. Stat. Med. 10.

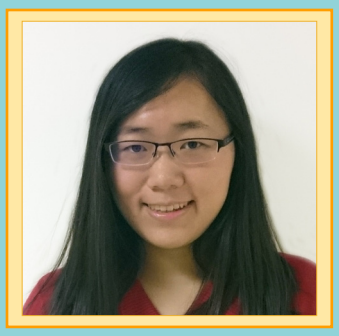
Meet the New Fellows



Yu Shi is a new Postdoctoral Fellow in the Center for Molecular Medicine under Dr. Haiming Cao. She earned her Ph.D. in Biological Sciences from Nanyang Technology University, Singapore, where she was also a graduate researcher and a lab manager. Yu was previously a research fellow at the Singapore Institute for Clinical Sciences. Her project is to identify and elucidate the role of long non-coding RNA in the development of metabolic diseases. After her fellowship, she would like to attain a faculty position or become an industrial scientist.

Jun Li is a new Postdoctoral Fellow in the Systems Biology Center under Dr. Keji Zhao. He earned his Ph.D. in Biostatistics from the University of Alabama at Birmingham, where he was also a graduate research assistant and postdoctoral fellow. Jun previously was an assistant professor at Peking University. His project is exploring genome-wide chromatin interaction by using Super-C technology. He will be mainly involved in bioinformatics data analysis.

Meet the New Fellows



Xianfeng Ping is a new Postdoctoral Fellow in the Center for Molecular Medicine under Dr. Manfred Boehm. She earned her Ph.D. n Biophysics from Peking University, China, where she was also a researcher. Xianfeng has previously researched at Univ. of California, San Francisco. Her project is to figure out the mechanism of undiagnosed disease using bioinformatics and statistical methods. She would like to be an independent principal investigator in academics or in the industry after her fellowship.

Announcements

Career Development Series

The NHLBI DIR Fellows Advisory Committee will be hosting a monthly Career Development Series in spring 2016, featuring science career panelists, some of whom were previously NIH fellows. These sessions are aimed at postdoctoral fellows, but anyone is welcome. Each informal panel Q&A session will be held from 3:30-4:30PM, followed by a networking happy hour from 5-6PM—all are invited! Please stay tuned for more details and RSVP links, and see below for which careers are covered during which months:

- January, date TBA: careers in science teaching
- February 26: careers in science writing/communications
- March 17: careers in science policy
- April, date TBA: careers in biotechnology/pharmaceuticals industry
- May 5: careers in science research program development, project management, and grants administration

Summer Internship Program

Supervising a summer intern is a great way to get mentoring experience. The website for summer internship applications is now open. Please refer to the email from the Office of Education for more policies and directions on accepting students.

The Research and Training Opportunities database is accepting applications until March 1, 2016. Interns have to be accepted by April 30, 2016. Please visit the RTO database to search for SIP applications (access is granted only to Principal Investigators): https://www.training.nih.gov/apps/nihForms/users/forms/login.aspx

Thank you for making the 2015 SIP a success, and we look forward to the summer of 2016!


2015 NHLBI Summer Internship Program

Elsevier Advancing Postdoc Women Guidebook

The National Postdoctoral Association (NPA) has published The Advancing Postdoc Women Guidebook to assist postdoc women in navigating through their careers by utilizing professional societies and associations, as well as other programs and resources, to help them overcome some of the biggest obstacles to women's career advancement.

The guidebook was written with information collected from the Elsevier Advancing Postdoc Women survey. Information about the survey can be found in an online clearinghouse: http://www.nationalpostdoc.org/page/elsevier

The focus of the clearinghouse and the guidebook is on mentoring, childcare, and career and professional development programs. Many of these programs and resources are also of use to postdoc men and graduate students.

The guidebook is available for download here: http://www.nationalpostdoc.org/?page=ElsevierGuidebook