Lab Spotlight: Steidl Lab

simplyblood.org/2019/03/lab-spotlight-steidl-lab.html

ISEH Headquarters March 8, 2019

How long have you had your lab?
11 years

How many members make up your lab? Students/postdocs?
14 total, 5 graduate students, 6 postdocs, 3 technicians

What is the major research theme of your lab?
Molecular Regulation and Targeting of Pre-Cancerous and Cancer Stem Cells in Hematopoiesis and Leukemogenesis

What is the most exciting project in your lab right now?
We have several highly exciting projects going on in the lab right now. One project I am particularly excited about is using single molecule analysis to study transcription state dynamics in normal and malignant stem cell differentiation. Through a novel methodology at the single cell and single molecule level we are obtaining insight into the transcriptional regulation of hematopoietic stem cell commitment and differentiation at a thus far unprecedented resolution – with some really exciting, and some surprising, new findings.

What's the biggest accomplishment your lab has had recently?
This is a tough question as the true value of scientific findings often only emerges over time and does not correlate well with the impact factor of the journal they were originally published in. However, in my mind an (incomplete) list of particularly important accomplishments from our lab would include: 1) The discovery and mechanistic studies of IL1RAP as a key molecule on pre-leukemic and leukemic stem cells in MDS and AML (Barreyro L, Blood 2012; Mitchell K, JEM 2018), which has led to therapeutic targeting efforts now entering the clinic; 2) Identification of MDMX as an important therapeutic target in AML (Carvajal L, Science TM 2018); 3) Demonstration of aberrant stem cells in MDS in a close collaboration with Amit Verma's lab (Will B, Blood 2012), development of one of the first mouse models of pre-LSC to MDS to AML progression (Will B, Nat Med 2015), and discovery of functionally defined human pre-MDS-SC and demonstration that progression of MDS to secondary AML is driven at the stem cell level in patients (Chen J, Nat Med 2018).

What is the key to running a successful lab?
In my mind it is critical to match projects well with the specific motivation, goals (including aspirational ones), and interests (both short-term and long-term) of each student or postdoc in the lab. Also, I try to have very interactive scientific relationships with trainees in the lab, wherever possible. Some of the most exciting findings and directions evolve from a constant back and forth of ideas and stimulating discussions between mentor and mentees. One other very important thing is to establish and foster a generally supportive and collaborative environment in the lab. While each student and postdoc has their own project it is key that lab members freely share thoughts and discuss with each other, and also help each other out with experiments or specific techniques that different individuals have different experience and expertise with.

What facilities or equipment does your lab absolutely depend on?
Multi-parameter ultra-high-speed cell sorting of primary human and mouse cells, as well as transplantation models are essential for our work, along with single/low cell RNA and DNA sequencing and single molecule RNA imaging, and plus the required computational biology.

What was the most exciting part about starting your new lab?
The ability to define and implement your own research agenda, and to assemble and mentor

an interactive team of motivated and ambitious scientists. Also, the ability to change research goals and directions over time and to take advantage of newly emerging scientific opportunities as they present and arise from new data.

Does your lab attend the ISEH annual meeting?
Yes. I always attend if my schedule permits. I also encourage lab members to submit abstracts and attend the meeting if possible.

What is the most beneficial aspect of ISEH membership for your lab?
The annual meeting is one of the highlights every year. The meeting has just right size and scope. ISEH is not as narrow as some other meetings in the stem cell / leukemia fields but at the same time not as gigantic and overwhelming as more clinically oriented international hematology and cancer meetings. It also features exactly the right mix of fundamental basic science and translational aspects that are particularly relevant and thought-stimulating for our laboratory. Lastly, it provides great interaction opportunities at all levels and natural 'mixing' of students, postdocs, and PIs alike.

How do members of your lab celebrate accomplishments?
In the warmer months, we gather on the lawn in the inner yard of Einstein for beer/wine and snacks to celebrate major papers. In the winter months, we do the same in the CellBio "Incubator", the socializing area of our department.

Does your lab have any fun traditions?
Once a year we do a Lab BBQ on the deck and in the backyard of our home, with spontaneous fun games (last year it was a soccer game 'students versus postdocs'), and lots of good food, beer/wine, and whiskey. Always a lot of fun and usually a long night!

Ulrich Steidl, MD, PhD
Professor of Cell Biology, and of Medicine (Oncology)
Albert Einstein College of Medicine – Montefiore Medical Center
https://sites.google.com/site/usteidl/
http://www.einstein.yu.edu/faculty/11118/ulrich-steidl/

Each month, Simply Blood spotlights a lab focused on the research of basic hematology, immunology, stem cell research, cell and gene therapy, and other related aspects. Get to know these different labs around the world! This month, we are featuring the Steidl Lab at Albert Einstein College of Medicine in Bronx, New York, USA.