

## Recent Fellowship Recipients

### Justin Hines, Iowa State University



I am honored that my project was selected and delighted to be an AFAR fellowship awardee. Basic research, in the field of aging and in all fields, relies on the dedication and support of organizations such as this one. I am grateful

to have the opportunity to make a contribution to science, and hopeful that my work will be a useful addition to the field.

### Susan Swanberg, University of California Davis



I was very appreciative of my award by AFAR. I have actually completed my project and am writing up the results. My study involves investigations of how important

genes are regulated and can be regulated. Not all genes are functioning at one time. Of particular interest is the gene for telomerase. Telomerase is an enzyme that decreases activity with aging and leads to senescent cells, but is very active in tumors and facilitates tumor cell regulation. I found that I could use a tool called silencing ribonucleic acid (siRNA) to control a related gene, c-myc, that regulates telomerase. I have now graduated and moved on to a postdoctoral position studying the genetics of autism spectrum disorders. I will be providing a full report on my c-myc research in the next month or so.

### Bor-Tyh Lin Boston University

Mr. Lin is a medical student at Boston University. He is studying the role adaptor protein p130Cas in breast cancer. His goal is to reduce tumor growth in women with advanced disease while avoiding cardiac dysfunction caused by current treatments.

### Pharmacogenomics: Feel Great, Less Side Effects

Have you ever wondered why the same drug may help or harm two different people? Why one person must take twice a recommended dose and another half? These answers may lie in Pharmacogenomics, the study of how our genes influence our response to various types of drugs.

One application of pharmacogenetics is to develop targeted therapies for diseases such as cancer. Tumors have vastly different pathologies depending on the area of the body in which they arise. For example, tumor genomics researchers have found that chronic myeloid leukemia and lung cancer are linked to the activity of enzymes called tyrosine kinase inhibitors while breast cancer is linked to the overexpression of the HER2 protein. By identifying the genes that give rise to renegade enzymes and proteins, doctors can predict, prevent and more effectively treat disease.

Another application of pharmacogenetics is to understand how our entire bodies react to a drug in order to determine the best treatment and dosage. "Genes regulate drug metabolism," says Felix Frueh, Ph.D., associate director for genomics in the Food and Drug Administration's Office of Clinical Pharmacology and Biopharmaceutics.

"Differences in the sequence of a gene can cause (sic) enzymes appearing in various forms in individuals. This is why different people process the same drug differently."

Such enzymatic differences may mean that a person who metabolizes a drug quickly may need a higher drug dose whereas a slow metabolizer may build up toxic levels of a drug. When a drug, or its by-products, are poorly metabolized, severe side effects can occur throughout the body.

By determining which genes indicate a risk for severe side effects, the health care industry may be able to limit the use of drugs with adverse side effects to patients identified as resilient to these events. And decreasing adverse events and increasing successful therapy could lower the cost of health care, says Allen Roses, M.D., senior vice president for genetics research at GlaxoSmithKline (GSK).

The FDA is already developing pharmacogenomic diagnostics tools that will help doctors decide what type and amount of a drug will work best for each patient. The FDA recently cleared the AmpliChip Cytochrome P450 Genotyping Test and the Invader UGT1A1 Molecular Assay which detect mutations in genes that are active in metabolizing many types of drugs.

While many researchers and health care professionals hope that someday every patient will have a genetic profile included in their clinical files, the reality may be further off. Understanding the clinical applications of pharmacogenomics will make practicing medicine more complicated than the traditional trial and error approach.

**For More Information Visit**  
[www.fda.gov/cder/genomics/](http://www.fda.gov/cder/genomics/)

### Support AFAR while you shop on-line & SAVE



Now you can support the American Foundation for Aging Research (AFAR) just by shopping on-line. We have recently registered with Shop For Charity Day, Inc (SFCD) – an online shopping mall designed to distribute profits from everyday purchases to non-profit organizations.

#### How SFCD works:

You can shop at of the brand name or specialty shops listed at <http://shopforcharityday.com/>. There is **no surcharge** on products listed at this site. You will find the same products **on sale** and some stores even offer **free shipping**. Each store offer. **Between 4-75% of the purchase price on each product or service bought goes to AFAR.** You shop directly from the retailer and never give anyone else your credit card information.

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4. Note: You may contribute through ANY of the 1,000 stores hosted, not just the stores initially displayed. From this page you may search for a brand-name store, specific product or use the product directory.

Please do not hesitate to contact us if you have any questions about this opportunity to give to AFAR at no additional cost to yourself. We thank you for your continued support of aging research.



**Brain Boggler:** Be the first person to email the complete, correct answer to the following question and have your name and city printed with the answer in our next issue. Send answers as a word attachment to [afar\\_office@ncsu.edu](mailto:afar_office@ncsu.edu)

Five blood donors sitting on a bench from left to right. Determine the position of each patient along with their blood group, age, height and weight (\*hint, use a chart\*). Their ages are 5, 9, 30, 46 and 60. Their heights are 40, 48, 60, 65 and 74. Their weights are 40, 75, 96, 125 and 165.

The person on the far right is 37 years older than Jason, and is 60 inches tall.

Jason weighs 56 pounds more than his height.

Alan weighs 75 pounds and is 74 inches tall.

John is type AB and weighs 56 pounds less than Jason.

The person in the centre is 9 years old, is blood type AO and weighs 96 pounds.

Adam, who is the first, is 65 inches tall, and weighs 100 pounds more than his height.

The person who is blood type O, is 25 years older than the person to the left of them.

Kevin is 60 years old.

The person who is blood type A, is 55 years younger than Kevin and is not next to the person who is type AO.

The person who is next to the 9 year old but not next to the person who is 65 inches tall, is blood type B, and weighs 125 pounds.

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## American Foundation for Aging Research

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The American Foundation for Aging Research is solely dedicated to granting scholarships and fellowships to innovative young scientists utilizing cutting-edge technology to study age-related diseases.

### Message from AFAR awardee, Chandler Robinson:

As a current Senior at Northwestern University I have spent the past three years investigating the mechanism by which the potential cancer fighting drug Tetrathiomolybdate (TM) binds copper in the body. In order for a tumor to exceed a critical size of 2mm, angiogenesis, a copper dependent process, must be stimulated to divert nutrients to feed a tumor's rapid growth. Lowering copper levels moderately with Tetrathiomolybdate produces strong antiangiogenic and potential anticancer effects.

Conducting my own research was a revelation. Never before had I been challenged to think so critically, so analytically, about a problem as when I began exploring the properties of Tetrathiomolybdate. To encourage as many other students in the Chicago area to realize the tremendous benefits of scientific research as possible, I established the "Chicago Area Undergraduate Research Symposium"(CAURS).

After a year of collaboration with the faculty, staff and administrators at several universities in the Chicago area, the first Chicago Area Undergraduate Research Symposium (CAURS) was held on April 23, 2005. The overwhelming success of last year's event inspired me to establish a national not-for-profit "American Undergraduate Research Society" (AURS). AURS mission is to encourage, support and promote high quality undergraduate student-faculty scientific and engineering research through the conduct of regional undergraduate student symposia in collaboration with select colleges and universities in the United States. Through these symposia AURS will be able to award grants to:

- Top U.S. undergraduate student researchers for national and international travel expenses
- Winning undergraduate researchers whose submissions and presentations recognized at the regional symposia.
- Undergraduate science and engineering students that develop creative ways to stimulate greater interest in the conduct of undergraduate science and engineering research at their respective colleges and universities.

The next CAURS symposium will be held April 1, 2006. We also welcome Washington University in St. Louis, which has agreed to host the first annual St. Louis Area Undergraduate Research Symposium (StLAURS) this April 22, 2006 in collaboration with 5 other universities. To learn about how you or your academic institution can become involved, sponsorship opportunities for organization/company or to make a contribution, please visit [www.caurs.com](http://www.caurs.com) or contact me directly at [cdr416@gmail.com](mailto:cdr416@gmail.com)

Many thanks to those who have supported AFAR and whom are committed to student research.

Best Regards,

Chandler D. Robinson  
President and Founder of the American Undergraduate Research Society

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Time stays long  
enough for anyone who  
will use it.

— Leonardo Da Vinci