



The American Fisheries Society  
**Genetics Section**  
**Newsletter**  
Volume 23, Issue 2  
May 2010



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**President's Message**

Dear Genetics Section Members,

Over the past two years my understanding and appreciation of the work performed by dedicated professionals associated with the American Fisheries Society and the Genetics Section in particular has grown immeasurably. I am thankful for the opportunity to serve as this Section's President. I look forward to working with members of the Section and Parent Society in years to come in a greater capacity, and with greater commitment than I may have considered prior to my acceptance of this position. I have been truly humbled by the commitment and level of volunteerism exhibited by members I have interacted with. My sincere thanks to all who have stepped forward in the past several years to contribute to this Section's activities.

I would like to take this opportunity in the sunset of my term to thank several individuals whose contributions make our Section function effectively. First, I am extremely grateful to **Joel Carlin**, our man with the 'nose for news' for his outstanding service as the Genetics Section Newsletter Editor. Joel scours the list servers and our Section's membership for news-worthy items and for announcements of interest to our membership. The advancements made to the newsletter over the past years have been badly needed, much appreciated, and could not have been accomplished without Joel's dedication.

Secondly, I would like to thank **Eric Hallerman** for his time and efforts in the area of student membership. Eric took considerable time from his duties to assist in efforts with the AFS Student Subsection and our students to work toward increased participation by our student members. I hope you all will read the recent article published in Fisheries by two of our graduate student members (**Jamie Roberts** and **Yen Duong**) on their views of professionalism and the benefits of Section membership to our students. Student members have also benefited by our Section's expansion of travel grants to meetings other than the annual AFS meeting. Congratulations to this year's recipients **Mike Ackerman** who received a travel grant to present at the Coast-wide meeting and **Matt Smith** who received a travel grant to present at the SNP III Workshop.

Past President **Ed Heist** and Past Past President **Jeff Hard** have continued to work in multiple areas associated with Section Activities. Their contributions and sage advice have been much appreciated.

Our Section sponsors two awards that are given annually. The Phelps Award is given to the best paper published by Section members in an AFS Journal. **Ken Currens** have been the chair of the selection committee for the award for a number of years. Many thanks to Ken and to **Chris Habicht, Brian Sloss, Bernie May** and **Orlay Johnson** who have also served during the past two years. The Wright Award recognizes the top student papers presented at the annual AFS meeting. **Jeff Olsen** has been the head of this committee for several years. **Meredith Bartron** and **Joel Carlin** have also recently served on this committee.

Finally President Elect **Templin** and Secretary-Treasurer (and President-Elect) **Meredith Bartron** have served in numerous capacities on the Section's Ex-Comm and have contributed greatly to Section Activities.

I sincerely hope that the service provided by these and other individuals will continue so that the Section will grow and flourish in the years to come.

Sincerely,

*Kim Scribner*  
*President, AFS Genetics Section*

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## Apply Today for the Genetics Section Graduate Award in Memory of James E. Wright

The Genetics Section of the American Fisheries Society is pleased to announce the **James E. Wright Graduate Award**. This award is presented annually by the Genetics Section at the AFS Annual Meeting and is intended to recognize excellence in graduate-level work in fisheries genetics and to assist graduate students with travel to the national meeting. The section anticipates awarding two checks for \$500 each to attend the 2010 AFS annual meeting in Pittsburgh. All graduate students are encouraged to apply.

Selection will be based on the following criteria:

1. Potential for success in research in fisheries genetics (60%)
2. Anticipated contribution to upcoming annual meeting, e.g. paper, poster, or other contribution (20%)
3. Service to the Society, its Sections, or Chapters (10%)
4. Demonstrated need for travel assistance (10%)

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Application Procedure:

1. Applicant must be a full or affiliate member of the Genetics Section at the time of application.
2. Application package should include:
  - a. A brief curriculum vitae including anticipated degree, date of completion, and career goals
  - b. A statement of the thesis or dissertation and abstract of progress to date
  - c. The names and addresses of two references familiar with the applicant's background and abilities.
  - d. A statement of previous service to the Society, its Sections, or Chapters, and need for travel assistance.
  - e. A statement addressing anticipated contribution to the upcoming annual meeting.

**Deadline for application is: June 18, 2010**

All application materials should be sent via postal or email to: Jeffrey B. Olsen, Conservation Genetics Laboratory, U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, Alaska 99503. Phone (907) 786-3598, Email: [jeffrey\\_olsen@fws.gov](mailto:jeffrey_olsen@fws.gov).

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## **Congratulations!!! Genetics Section Student Travel Awards**

We at the AFS Genetics Section extend heartfelt congratulations to recipients of two Genetics Section Student Travel Awards.

**Matt Smith** from the School of Aquatic and Fishery Sciences at the University of Washington won a student travel award to the SNP Workshop III in Blaine, WA on March 22-24.

**Michael Ackerman**, from the School of Aquatic and Fishery Sciences at the University of Washington won a student travel award to the Coast-Wide Meeting to be held this summer.

Congratulations Matt and Mike!!!

Sincerely,

*Kim Scribner*  
*President, AFS Genetics Section*

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## Lab Profile: Fish Ecotoxicology and Population Lab

Dr. Ike Wirgin, Dept. of Environmental Medicine, NYU School of Medicine

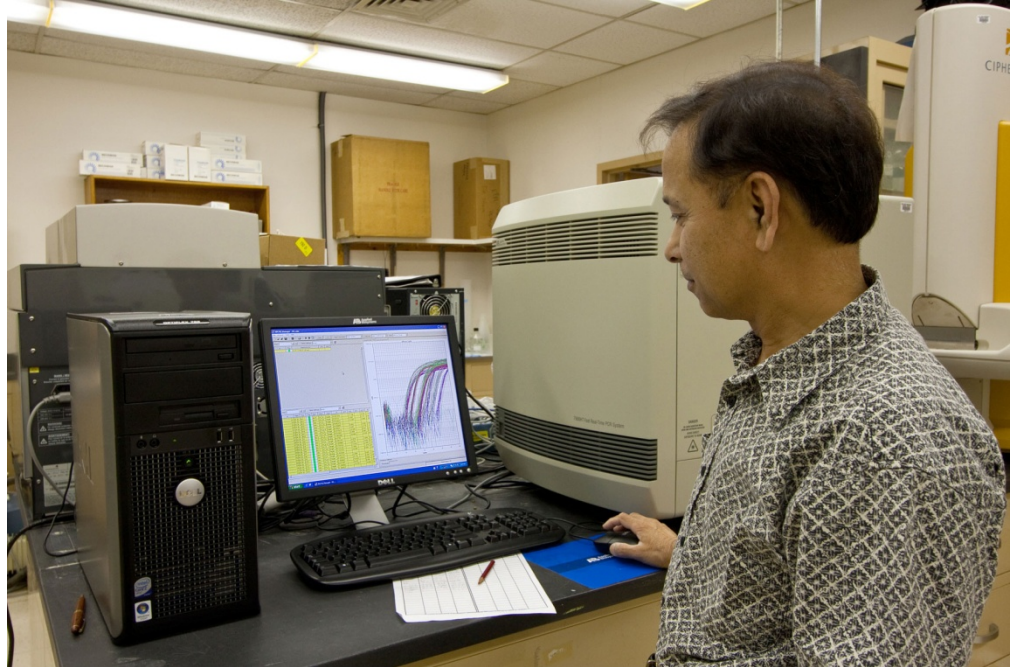
Our lab is housed at the Sterling Forest Campus (45 miles NW of New York City) of the Department of Environmental Medicine of the NYU School of Medicine. As a result of being part of a medical school, our research focus probably differs from most other fish genetics labs. But, we feel that our use of an environmentally relevant in vivo fish model provides benefits not enjoyed in vitro or inbred rodents typically investigated in this setting. Our research falls into three general categories;

**1. Molecular Ecotoxicology:** The Hudson River, in our backyard, contains the largest federal Superfund site in the U.S. because of its contamination with PCBs. In addition, locales within the estuary are highly polluted with dioxins, PAHs, and a variety of metals including chromium (Cr). Our lab has used a species common to the Hudson River, the Atlantic tomcod, as a model to study the toxic effects from the molecular to the population levels of these chemical pollutants. Tomcod was chosen for our studies because of the extraordinarily high prevalence of liver tumors and the truncated age structure of the Hudson River population observed during the early 1980s (44-95% prevalence of hepatocellular carcinomas).

Our studies have involved cloning genes associated with metabolism of these toxicants or initiation of carcinogenesis to evaluate the role of PCBs and other pollutants in the etiology of disease. This has enabled us to compare expression levels among tomcod from rivers with varying levels of pollution or those chemically treated in the lab under controlled conditions. Recently, we have used quantitative RT-PCR at candidate genes and developed tomcod-specific cDNA microarrays to characterize global patterns of gene expression. Interestingly, we have found that tomcod from the Hudson River are now highly resistant to PCB induced early life stage toxicities and expression of cytochrome P450 genes. We have discovered that resistance is due to a single mutation in a receptor gene that binds PCBs and that mediates most of these phenotypic responses. We feel that resistance likely resulted from strong selective pressure by contaminants for the resistant phenotype. We are also applying many of the same early life stage toxicity and gene expression assays to both species of sturgeons in the Hudson to evaluate their sensitivities to PCBs and compare them to those reported in other fishes.

Recent mammalian studies have implicated the role of chemically-induced epigenetic alterations in a variety of diseases including cancer. Epigenetic change elicits phenotypic change through changes in downstream gene expression. Our lab is currently investigating the role of Cr treatment singly or combination with PCBs and PAHs on histone modifications and correlating these changes with gene expression and toxicities in early life stages of tomcod. We are also now mapping the histone modifications that we have observed to individual candidate genes using chromatin immunoprecipitation (ChIP) assays but in the future we hope to use the ChIP-Seq approach to globally map these histone alterations across the entire tomcod genome. This will require the use of the next generation sequencing approach.

**Dr. Nirmal Roy, a Research Scientist, performing ChIP analysis of H3K14Ac (a modification of lysine 14 of histone 3) at the cytochrome P4501A promoter in Atlantic tomcod treated with graded doses of chromium.**



**2- Population Genetics of Marine and Anadromous Fishes:** We have a long history of investigating the stock structure of a variety of fishes of importance to management in the northeastern U.S. using DNA-based approaches. Our current and recently funded projects are on American shad, winter flounder, sea lamprey, striped bass, Atlantic sturgeon, and shortnose sturgeon. Our approaches include mtDNA control region sequencing, microsatellites and SNPs analyses. The Atlantic sturgeon project is particularly interesting because of their potential ESA listing and demonstrated vulnerability to bycatch in a variety of coastal fisheries and the unknown stock origin of “bycaught” contingents. Our results will enable us to quantify the impact of bycatch on individual river stocks of Atlantic sturgeon.

**A subadult Atlantic sturgeon of unknown stock origin jumping in the Atlantic Ocean off Fire Island Inlet, New York.**



At right: a sea lamprey about to be collected from its spawning grounds in the Basherkill River, a tributary of the Delaware River in New York.



Below: Lorraine Maceda, a Research Technician, characterizing allelic frequencies at a battery of microsatellite loci to determine the stock origin of American shad in coastal bycatch harvest.



**3. Genetic Susceptibility to Disease:** Being in a medical school and having a long history in the use of DNA-based approaches in characterizing genetic variation, we collaborate with epidemiologists in identifying genes associated with inter-individual variation in susceptibilities to breast, pancreatic, ovarian, and endometrial cancers. These candidate gene studies have used haplotype tags and TaqMan real time genotyping to compare allelic frequencies in prospective studies of cases and controls in DNAs from 14,000 women enrolled in the NYU Women's Health Study.

**Graduate and Postdoctoral Research Opportunities:** The Department of Environmental Medicine provides graduate training at the M.S. and Ph.D. levels through the NYU School of Arts and Sciences. All Ph.D. and most M.S. students receive stipends and full tuition remission. Almost all of our coursework is offered at the Washington Square Campus of NYU in lower Manhattan. The Department also has several slots annually for Postdoctoral trainees on our recently renewed NIEHS Training Grant. Those interested in doing research in our lab must have projects that focus on the area of Ecotoxicology.

**Would you like to know more?** If you are interested in learning more about the work done by Dr. Wirgin and his colleagues, please contact him at (845) 731-3548 or via email at [Isaac.Wirgin@nyumc.org](mailto:Isaac.Wirgin@nyumc.org).

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## Symposium Announcement

### Coastwide Salmonid Genetics Meeting

**June 2-4, 2010, Grove Hotel, Boise, Idaho**

You are invited to attend the 2010 Coastwide Salmonid Genetics Meeting! Please join us for a stimulating meeting with all of your top colleagues.

**Important Information:**

- Located at Grove Hotel in rockin' downtown Boise! (reservation info to come)
- Proceedings planned to be published in special issue of *Transactions of the American Fisheries Society* (more info to come)
- Student travel scholarship to be provided by AFS Genetics Section (more info to come)
- Mug at registration entitles holder to free beer at Banquet!
- Finish with a rafting trip on the Payette River!

**Tentative Agenda:**

Tuesday, June 1:	Evening - Ice-Breaker Social
Wednesday, June 2:	Morning - Plenary session: Genetic adaptation of salmonids Afternoon –Plenary and general session Evening – Poster Session
Thursday, June 3:	Morning - General session Afternoon – Fluidigm Exhibit and Breakout Meetings Evening –Social & Banquet
Friday, June 4:	Morning –General Session Afternoon –Rafting trip

For more information, contact: Shawn Narum ([nars@critfc.org](mailto:nars@critfc.org)) or Chris Kozfkay ([christine.kozfkay@idfg.idaho.gov](mailto:christine.kozfkay@idfg.idaho.gov))

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## Publicize, Politicize, Proselytize: Contribute to the AFS Genetics Section Newsletter

If you would like to advertise a symposium or job opening, or have your laboratory profiled, consider submitting to the AFS-GS newsletter. Simply contribute by emailing the editor at [jcarlin@gustavus.edu](mailto:jcarlin@gustavus.edu) on or before **July 25**. Remember that this is the newsletter just before the annual meeting, so you can use this to invite people to symposia, talks, or even for hotelsharing. We look forward to hearing from you!

Sincerely,  
Joel Carlin, Newsletter Editor

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## Calendar of Upcoming Events

### June

Jun 2-4 — **Coastwide Salmon Genetics** meeting. Grove Hotel, Boise ID. See this issue for details.

Jun 6-11 — Annual meeting of **ASLO & NABS 2010**, the joint Meeting of American Society of Limnology and Oceanography and the North American Benthological Society. Santa Fe NM. See [www.aslo.org/meetings/santafe2010/](http://www.aslo.org/meetings/santafe2010/).

Jun 15 – Abstract deadline for the annual symposium of the American Genetic Association on **Conservation Genomics**. To be held at the University of Hawaii at Hilo, Hilo, Hawaii from 26-28 July, 2010. See <http://www.theaga.org/2010/>.

Jun 18 – Application deadline for the **AFS Genetics Section Wright Award**. See this issue for details.

Jun 25-27 — SEB Animal Section Symposium on **Intra-specific diversity in aquatic animals**. At the Sete Station Méditerranéenne de l'Environnement Littoral, Sète, France. See <http://www.sebiology.org/meetings/Sete2010/Sete.html>.

Jun 25-29 — **Evolution 2010**, the annual meeting of the Society for the Study of Evolution the Society of Systematic Biologists (SSB), and the American Society of Naturalists (ASN), at the Oregon Convention Center, Portland Oregon. See [www.evolutionsociety.org/SSE2010/](http://www.evolutionsociety.org/SSE2010/).

Jun 29-30 – **iEvoBio 2010**, the 2010 Informatics for Phylogenetics, Evolution, and Biodiversity conference. Held contiguously with Evolution 2010 in Portland Oregon. See <http://ievobio.org/ocs/index.php/ievobio/2010>.

### July

Jul 1 – Early registration deadline for the annual symposium of the American Genetic Association on **Conservation Genomics**. To be held at the University of Hawaii at Hilo, Hilo, Hawaii from 26-28 July, 2010. See <http://www.theaga.org/2010/>.



Jul 3-7 — 24<sup>th</sup> International Congress on **Conservation Biology**. To be held in Edmonton, Alberta Canada. See [www.conbio.org/Activities/Meetings/2010](http://www.conbio.org/Activities/Meetings/2010).

Jul 4-8 — **SMBE 2010**, the annual meeting of the Society of Molecular Biology. Lyons Conference Center, Lyons France. See <http://smbe2010.univ-lyon1.fr>.

Jul 7-12 — **Ichs and Herps '10**, the Joint Meeting of the American Elasmobranch Society, the American Society of Ichthyologists and Herpetologists, the Herpetologists League, and the Society for the Study of Amphibians and Reptiles. Westin Providence Hotel, Providence RI. See [www.dce.k-state.edu/conf/jointmeeting/](http://www.dce.k-state.edu/conf/jointmeeting/).

Jul 25 — Submission Deadline for the **AFS Genetics Section Newsletter**. Contact the AFS GS editor at [jcarlin@gustavus.edu](mailto:jcarlin@gustavus.edu).

Jul 26-28 – Annual symposium of the American Genetic Association on **Conservation Genomics**. University of Hawaii at Hilo, Hilo, Hawaii from 26-28 July, 2010. Registration deadline is Jul 1, abstract deadline is Jun 15. See <http://www.theaga.org/2010/> for details.

## August – October

Aug 17 — Symposium deadline for **SICB 2011**, the annual meeting of the Society of Integrative and Comparative Biology. To be held 3-7 Jan 2011 at the Salt Lake City Marriott in Salt Lake City, Utah. See <http://www.sicb.org/meetings/2011/>.

Sep 12-16 — **140<sup>th</sup> Annual Meeting of the American Fisheries Society**. Westin Hotel and the David L. Lawrence Convention Center, Pittsburgh PA. See <http://www.fisheries.org/afs10/>.

Sep 28-30 — **Wild Trout X**. Holiday Inn, West Yellowstone MT. See <http://www.wildtroutsymposium.com>.

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