SAMPLE ABSTRACTS

GRADUATE LEVEL

Researcher: Rita Asgeirsson

Presentation Title: An Analysis of Yukon Delta Salmon Management

Research focus: Fisheries management related to Bering Sea fisheries and Yukon River salmon populations.

School: Western Washington University

Student Level: Masters

Presentation Type: Oral Presentation

Abstract:

An Analysis of Yukon Delta Salmon Management

Rita Asgeirsson, Western Washington University

The broad range of Pacific Alaskan salmon has resulted in the creation of a complex and multiorganizational system of management that includes the state of Alaska, various federal departments, a Congressionally-mandated fishery council, and a number of commercial and nongovernmental fish organizations. In the Bering Sea salmon are caught by the commercial groundfish fleet as by-catch. On the Yukon River salmon are commercially and traditionally harvested for both economic and cultural sustenance by the Yup'ik residents of the Yukon Delta. Declining salmon populations has driven scientific research which considers the effects of Bering Sea salmon by-catch.

My research findings indicate that Bering Sea fisheries occur where juvenile salmon mature, directly impacting Yukon River salmon populations. Further, the research reflects that although Yukon salmon populations have plummeted, a recent effort was made to open the northern Bering Sea, which includes the Yukon River coastal shelf, to deep-sea commercial fishing.

By researching the relationship of policy to cultural salmon dependence, it becomes evident that Alaskan salmon-tribes are excluded from salmon management and decision-making. Legal research reflects that three basic federal Indian concepts – inherent rights, Indian Country, and tribal right of occupancy – emerge as potential foundations that may allow Alaskan salmontribes to begin sharing legal responsibility over salmon.

Yukon River salmon are an international and anadromous species that require multiorganizational management. My research reflects that current management favors the Bering Sea commercial fishing

industry, despite data indicating Bering Sea fisheries impact Yukon salmon populations and an overall downward trend in Yukon salmon populations.

UNDERGRADUATE LEVEL

Researcher: Deneen Cole

Presentation Title: Characterization of Iron Deposition in Recombinant Heteropolymer Ferritins

Research Focus: Chemistry

School: SUNY Potsdam

Presentation Type: Poster Presentation

Abstract:

Characterization of Iron Deposition in Recombinant Heteropolymer Ferritins Deneen Cole, Dr. Fadi Bou-Abdallah, SUNY Potsdam (NY, USA), Dr. Paolo Arosio, University of Brescia (Italy), Dr. Sonia Levi, Vita-Salute San Raffaele University (Italy)

Ferritin is a ubiquitous iron storage and detoxification protein found highly conserved in species from bacteria to plants to humans. In mammals, ferritin is composed of two functionallyand genetically distinct subunit types, H (heavy, ~21,000 Da) and L (light, ~19,000 Da) subunits which co-assemble in various ratios with tissue specific distribution to form a shell-like protein. The H-subunit is responsible for the fast conversion of Fe(II) to Fe(III) by dioxygen (or H2O2) whereas the L-subunit is thought to contribute to the nucleation of the iron core. In the present work, we investigated the iron oxidation and deposition mechanism in two recombinant heteropolymers ferritin samples of ~20H:4L (termed H/L) and ~22L:2H (termed L/H) ratios. Data indicates that iron oxidation occurs mainly on the H-subunit with a stoichiometry of 2Fe(II):1O2, suggesting formation of H2O2. The H/L sample completely regenerates its ferroxidase activity within a short period of time suggesting rapid movement of Fe(III) from the ferroxidase center to the cavity to form the mineral core, consistent with the role of L-chain in facilitating iron turn-over at the ferroxidase center of the H-subunit. In L/H, Fe(II) oxidation and mineralization appears to occur by two simultaneous pathways at all levels of iron additions: a ferroxidation pathway with a 2Fe(II)/1O2 ratio and a mineralization pathway with a 4Fe(II)/1O2 resulting in an average net stoichiometry of ~3Fe(II)/1O2.

These results illustrate how recombinant heteropolymer ferritins control iron and oxygen toxicity while providing a safe reservoir for reversible uptake and release of iron for use by the cell.