Christian Schlötterer – Institute for Population Genetics, University of Vienna

"Using 2nd Generation Sequencing to Advance Mass Rearing of Arthropods"

John Adamczyk – USDA-ARS Wexlaco, TX

"Standardization of Mass Rearing Lepidoptera for Evaluation of the Efficacy of Transgenic Crops"

Kent Shelby & Tom Coudron – USDA-ARS, Columbia, MO

"Genomics – A Game Changing Technology for Mass Rearing Arthropods"

The Evolution of Gene Sequencing

Not long ago:

- -Isolate and digest DNA
- -Sequence fragments
- -Align patterns and reconstruct gene
- -Cost millions of dollars & took years

Today:

- -Isolate and digest multiple genes
- -Sequence fragments
- -Align patterns and reconstruct genes
- -Compare and quantify multiple genes
- -Cost < $X,000 & takes weeks

The Evolution of Gene Sequencing

Then:

- -1 sample source at a time
- -1 gene or gene fragment at a time

Now:

- -Multiple sample sources
- -Multiple samples at a time
- -Comparisons and quantifications

Tomorrow:

- -Compare entire genomes
- -Whole genotype comparisons to replace gene comparisons

Sequencing Pools of Individuals

- -Gene diversity within a population
- -Frequency of a trait w/in a population
- -Trait mapping
- -Evolutionary studies

Any Insect with GPS is an Experiment:

- -Source identification (origin/owner)
- -The distribution of your invertebrate
- -Which of your invertebrate strains are surviving the longest; dispersing the furthest; outcompeting?

Genotyping may prove more valuable than biomarkers, and will delineate the genetic basis behind performance.