

**Teaching the Genome Generation
California Northstate University, CA
July 9-13, 2018**

DAILY SCHEDULE

MONDAY

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|----------|--|
| 8:00 | Introductions |
| 8:30 | Program Introduction and DNA Basics
Faculty: Charlie Wray and Mike McKernan |
| 9:00 | Informed Consent Primer
Faculty: Dana Waring |
| 9:30 | Lab: Micropipetting Refresher and DNA extraction (Protocol 1 and 1b) |
| 10:00 | Break during incubation |
| 10:30 | Completion of DNA extraction protocol 1b; Discussion of PCR theory |
| 12:00 pm | Lunch: Explanation of education research and Introduction to TtGG Sharepoint Site
Faculty: Michael McKernan |
| 1:00 | Lab: Complete DNA extraction, long method (Protocol 1) |
| 2:30 | Bioinformatics 1: The NCBI Gene Interface
Faculty: Charles Wray |
| 3:45 | Break |
| 4:00 | Genomics Laboratory Procedures: Polymerase Chain Reaction (ACE – Introductory Biology) |
| 5:00 | Daily Debrief |
| 6:00 | Group Dinner (Optional) |

TUESDAY

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| 8:00 | Lesson plan development |
| 8:45 | Genomics Laboratory Procedures: Gel Electrophoresis (ACE – Introductory Biology) & Polymerase Chain Reaction (ACTN3, OXTR and CYP2C19 – Honors/AP Biology) (Protocol 4 - ACE) & PCR (Protocol 2a and 2b - OXTR and CYP2C19) |
| 10:00 | Break |
| 11:00 | Bioinformatics 2: Case Study 1 |

- 12:00 pm Lunch: **Ethics 2:** Athletic Performance, Genetic Complexity and Bioethics
Faculty: Dana Waring
- 1:00 **Lab:** Restriction Digestion (Protocol 3 - OXTR and CYP2C19)
Faculty: Charles Wray
- 2:30 Break
- 3:00 **Ethics 4:** Genetics, Behavior and Criminal Activity
Faculty: Dana Waring
- 4:00 **Genomics Laboratory Procedures:** Gel Electrophoresis (OXTR and CYP2C19 – Honors/AP Biology) (Protocol 4) & PCR TAS2R38
- 5:00 Daily Debrief

WEDNESDAY

- 8:00 **Ethics 3:** Eugenics
Faculty: Dana Waring
- 9:00 **Genomics Laboratory Procedures:** Gel Electrophoresis and Polymerase Chain Reaction & redo of amplifications and additional practice
- 10:30 Break
- 11:00 **Bioinformatics 3:** BLAST and CLUSTAL Sequence Analysis
- 12:00 pm **Lunch & a Movie: Ethics 5:** *Twitch* and Direct to Consumer Genomic Testing
Faculty: Dana Waring and Charlie Wray
- 1:30 **Lab:** Gel Electrophoresis from AM amplifications and PCR clean-up for sequencing (Protocol 5 - ACTN3, TAS2R38 and CYP2C19)
- 3:00 **Bioinformatics 4:** Case Study 2
Faculty: Charles Wray
- 5:00 Debrief

THURSDAY

- 9:00 **Bioinformatics 5:** Sequence and Genotype Analysis (Protocol 6 - ACTN3, TAS2R38 and CYP2C19)
Faculty: Charlie Wray
- 10:30 Break
- 11:00 **Open Discussion: Barriers to implementing *TtGG* in high schools?**
Faculty: Laura Butterfield (plus VTC)

12:00 pm	Lunch
1:00	Ethics 6: CRISPR Faculty: Dana Waring
2:30	Break
3:00	How to use pgEd resources and Additional Classroom Resources pgEd, TtGG lessons Faculty: Dana Waring
3:30	Report Out on Lesson Plans (all)
5:00	Program Evaluations (all)