

## Workshop

**Sun Mar 3, 2019**

### 4pm - 7pm Reception

**Where:** Ballroom Lobby St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA  
**Calendar:** Workshop  
**Created by:** lessem@colorado.edu

**Mon Mar 4, 2019**

### All day Advanced course

Mon Mar 4, 2019 - Fri Mar 8, 2019  
**Where:** St Julien Hotel and Spa 900 Walnut St Boulder, CO 80302  
**Calendar:** Workshop  
**Created by:** Jeff Lessem

### 8am - 9am Optional review: Linux/Unix operating system (Medland)

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA  
**Calendar:** Workshop  
**Created by:** lessem@colorado.edu

### 9am - 9:10am Introduction and welcome (Hewitt)

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA  
**Calendar:** Workshop  
**Created by:** lessem@colorado.edu

### 9:10am - 10:15am

**Overview: Historical context and current challenges (N. Martin and Boomsma)**  
**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA  
**Calendar:** Workshop  
**Created by:** lessem@colorado.edu

### 10:15am - 10:30am Introducing the computer system (Lessem)

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA  
**Calendar:** Workshop  
**Created by:** lessem@colorado.edu

### 10:30am - 11am Coffee Break

**Where:** Ballroom Foyer St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA  
**Calendar:** Workshop  
**Created by:** lessem@colorado.edu

### 11am - 12:30pm

**Biometrical models and introduction to genetic analysis (Sham and D. Evans)**  
**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA  
**Calendar:** Workshop  
**Created by:** lessem@colorado.edu

### 12:30pm - 1:30pm Lunch & RCR Discussion

**Where:** Great Room St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA  
**Calendar:** Workshop  
**Created by:** lessem@colorado.edu

## Workshop

**1:30pm - 3pm**

**Introduction to GWAS, common variation and PLINK (Colodro and Grasby)**

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

**Calendar:** Workshop

**Created by:** lessem@colorado.edu

**3pm - 3:30pm Tea**

**Where:** Ballroom Foyer St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

**Calendar:** Workshop

**Created by:** lessem@colorado.edu

**3:30pm - 5pm Quality Control in PLINK (Grasby and Colodro)**

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

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**5:30pm - 7:30pm Reception**

**Where:** Ballroom Lobby St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

**Calendar:** Workshop

**Created by:** lessem@colorado.edu

**Tue Mar 5, 2019**

**All day Advanced course**

Mon Mar 4, 2019 - Fri Mar 8, 2019

**Where:** St Julien Hotel and Spa 900 Walnut St Boulder, CO 80302

**Calendar:** Workshop

**Created by:** Jeff Lessem

**8am - 9am Optional review: PLINK and Polygenic Risk Scores (Medland)**

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

**Calendar:** Workshop

**Created by:** lessem@colorado.edu

**9am - 10:30am**

**Common variant association and population stratification (Abdellaoui and Okbay)**

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**10:30am - 11am Coffee Break**

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**11am - 12:30pm**

**Family-based association methods plus practical (Boomsma and van Dongen)**

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**12:30pm - 1:30pm Lunch & RCR Discussion**

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## Workshop

**1:30pm - 3pm**

**Imputation and Analysis of Imputed Data with Practical (Medland and Colodro)**

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**3pm - 3:30pm Tea**

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**Calendar:** Workshop

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**3:30pm - 5pm Methods for estimating heritability (Yengo, B. Neale, and Keller)**

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

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**5:30pm - 7:30pm Reception**

**Where:** Ballroom Lobby St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

**Calendar:** Workshop

**Created by:** lessem@colorado.edu

**Wed Mar 6, 2019**

**All day Advanced course**

Mon Mar 4, 2019 - Fri Mar 8, 2019

**Where:** St Julien Hotel and Spa 900 Walnut St Boulder, CO 80302

**Calendar:** Workshop

**Created by:** Jeff Lessem

**8am - 9am Optional review - X-Chromosomes and Sex Differences (Medland)**

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

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**9am - 10:30am**

**Methods for estimating genetic correlation (B. Neale, Keller, and Yengo)**

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**10:30am - 11am Coffee Break**

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**11am - 12pm Genomic SEM (Nivard)**

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

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**12pm - 12:30pm Power and Type 1 error (Sham and B. Neale)**

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### 12:30pm - 1:30pm Lunch & RCR Discussion

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### 1:30pm - 3pm

**EasyQC, meta-analysis (Metal), and multivariate meta-analytic approaches (Bartels and Okbay)**

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### 3pm - 3:30pm Tea

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### 3:30pm - 5pm Pathway analysis with practical (Posthuma and Watanabe)

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### 5:30pm - 7:30pm Genomics PLC Poster Session

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**Thu Mar 7, 2019**

### All day Advanced course

Mon Mar 4, 2019 - Fri Mar 8, 2019

**Where:** St Julien Hotel and Spa 900 Walnut St Boulder, CO 80302

**Calendar:** Workshop

**Created by:** Jeff Lessem

### 8am - 9am

**Heavily recommended review: Intro to Python and Jupyter Notebooks (Poterba and Seed)**

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

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### 9am - 10:30am Sequencing study theory (H. Martin and B. Neale)

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### 10:30am - 11am Coffee Break

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### 11am - 12pm Rare variant association (Simpson and B. Neale)

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## Workshop

### 12pm - 12:30pm Introduction to Hail (Seed and Poterba)

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### 12:30pm - 1:30pm Lunch & RCR Discussion

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### 1:30pm - 3pm

#### Hail: Genetic QC for common and rare variant data on the cloud (Seed and Poterba)

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### 3pm - 3:30pm Tea

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### 3:30pm - 5pm Hail: Genetic analysis and annotation at scale (Seed and Poterba)

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**Fri Mar 8, 2019**

### All day Advanced course

Mon Mar 4, 2019 - Fri Mar 8, 2019

**Where:** St Julien Hotel and Spa 900 Walnut St Boulder, CO 80302  
**Calendar:** Workshop  
**Created by:** Jeff Lessem

### 8am - 9am

#### Optional review: Simulation or who needs to collect data when you can make it up yourself (L. Evans)

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA  
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### 9am - 10:30am

#### FUMA, Functional mapping and annotation of GWAS (Watanabe and Posthuma)

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### 10:30am - 11am Coffee Break

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### 11am - 12:30pm Mendelian randomization (D. Evans and B. Neale)

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### 1:30pm - 3pm Epigenetics (van Dongen and Nivard)

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### 3pm - 3:30pm Tea

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### 3:30pm - 4:15pm Phenotype-driven Confounds (M. Neale and Pritkin)

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### 4:15pm - 5pm What excites the faculty, 5 minute talks (Chaired by Maes)

**Where:** Xanadu Ballroom St Julien Hotel & Spa, 900 Walnut St, Boulder, CO 80302, USA

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### 6pm - 9pm Farewell Party

**Where:** Jill's Restaurant, 900 Walnut St, Boulder, CO 80302, USA

**Calendar:** Workshop

**Created by:** lessem@colorado.edu