# CONTRA Innovative Training Network Workshop

*Handling Single Cell Data*

Józefów near Warsaw, Poland, September 9-15, 2018

**Holiday Inn Józefów - Aquila**

| Sunday, September 9, 2018 | |
|---|---|
| 14:00 | Hotel Check-in starts |
| 18:00 | Conference check-in starts |
| 19:00 | Common dinner |

## PART I: WORKSHOP

| Monday, September 10, 2018 | | |
|---|---|---|
| 9:00-9:05 | Introduction | |
| 9:05-9:50 | *Single cell RNA sequencing technologies* doi.org/10.1016/j.molcel.2015.04.005 | **Aleksandra Kołodziejczyk** |
| 9:50-10:35 | *Analysis of transcriptional dynamics using single-cell RNA-seq data* doi.org/10.1038/s41586-018-0414-6 | **Peter Kharchenko** |
| 10:35-11:05 | Coffee break | |
| 11:05-11:50 | *Spatial Transcriptomics - Bridging histology and RNA sequencing* doi.org/10.1126/science.aaf2403 | **Michaela Asp** |
| 11:50-12:35 | *Charting Tissue Expression Anatomy by Spatial Transcriptome Deconvolution* doi.org/10.1101/362624 | **Jonas Maaskola** |
| 12:35-14:00 | Lunch break | |
| 14:00-14:45 | *Unraveling new insights into human immune system landscape one cell at the time* doi.org/10.1126/science.aah4573 | **Alexandra Chloe-Villani** |
| 14:45-15:30 | *Disease-Associated Microglia: A Universal Immune Sensor of Neurodegeneration* doi.org/10.1016/j.cell.2018.05.003 | **Aleksandra Deczkowska** |
| 15:30-16:00 | Coffee break | |
| 16:00-16:45 | *Methods and principles for interpreting single-cell variation* doi.org/10.1038/nrg3833 | **Oliver Stegle** |
| 19:00 | Common dinner | |

| Tuesday, September 11, 2018 | | |
|---|---|---|
| 9:00-9:45 | *Identification of somatic mutations with single cell DNA sequencing* doi.org/10.1016/j.tig.2018.04.003 | **Peter Park** |
| 9:45-10:30 | *Efficient identification of somatic variants from bulk and single cell experiments* dx.doi.org/10.1101/121954 | **Alexander Schoenhuth** |
| 10:30-11:00 | Coffee break | |
| 11:00-11:45 | *Genetic analysis of differentiating cells using single-cell RNA-seq* dx.doi.org/10.1098/rstb.2012.0362 | **Anna Cuomo** |
| 11:45-12:30 | *Probabilistic inference of copy number clonal architecture from low-depth single-cell genomes* doi.org/10.1038/nmeth.4140 | **Adi Steif** |
| 12:30-14:00 | Lunch break | |
| 14:00-14:45 | *Single cell analysis of circulating tumor cell clusters* doi.org/10.1016/j.cell.2014.07.013 | **Nicola Aceto** |
| 14:45-15:30 | Special lecture: *introduction to drug resistance mechanisms and metastatic disease, part 2 (continuation from the first training event)* | **Eike Staub** |
| 15:30-16:00 | Coffee break | |
| 16:00-16:45 | *Single cell & big data approaches to understanding genome variation in normal individuals & disease* doi.org/10.1101/gr.201160.115 | **Jan Korbel** |
| 16:45-17:15 | break | |
| 17:15-18:30 | Installation party: *the Tutors help the ESRs with problems with installing software necessary for the practical tutorial part.* | **Anna Cuomo** and **Ximena Ibarra Soria** |
| 19:00 | Conference dinner | |

## PART II: PRACTICAL TUTORIAL
## Tutors: Anna Cuomo and Ximena Ibarra Soria

| Wednesday, September 12, 2018 | |
|---|---|
| 9:00-10:30 | DNA sequencing and experimental design. |
| 10:30-11:00 | Coffee break |
| 11:00-12:30 | Next-generation sequencing data processing. |
| 12:30-14:00 | Lunch break |
| 14:00-15:30 | Bulk and single-cell RNA-seq experiments and batch correction methods. |
| 15:30-16:00 | Coffee break |
| 16:00-17:00 | Single-cell RNA-seq data analysis: QC and technical variance. |

| Thursday, September 13, 2018 | |
|---|---|
| 9:00-10:30 | Single-cell RNA-seq data analysis: clustering and dimensionality reduction. |
| 10:30-11:00 | Coffee break |
| 11:00-12:30 | Single-cell RNA-seq data analysis: differential expression and dynamic processes. |
| 12:30-14:00 | Lunch break |
| 14:00-15:30 | Other types of genomic data |
| 15:30-16:00 | Coffee break |
| 16:00-17:00 | Projects in groups |

| Friday, September 14, 2018 | |
|---|---|
| 9:00-10:30 | Projects in groups |
| 10:30-11:00 | Coffee break |
| 11:00-12:30 | Projects in groups |
| 12:30-14:00 | Lunch break |
| 14:00-15:30 | Projects in groups |
| 15:30-16:00 | Coffee break |
| 16:00-17:00 | Projects in groups |

| Saturday, September 15, 2018 | |
|---|---|
| 9:00-10:30 | Presentations of projects |
| 10:30-11:00 | Coffee break |
| 11:00-12:30 | Presentations of projects |
| 12:30-14:00 | Lunch and farewell |