NORMic Imaging workshop 25-28 May 2021: Draft programme

	25th May Day1	26th May Day2	27th May Day3	28th May Day4
8:30-9:00	Intro (Oddmund)	Previous day lab summary (Felix) Outlook of the day presentation of results	Previous day lab summary (Rainer) Outlook of the day	Previous day lab summary (Kay) Outlook of the day
9:00-10:00	Digital Images (Rainer) Definition ,Limits New developments Bioimaging Image Formation	**Deconvolution and Deblur** (Rainer) The sampling process Point spread functions noise and noise reduction resolution limits reconstruction	Pia Larsson/Steve Cody <Pia.Larsson@monash.edu> Application Talk: tracking of blood cells in live mice	**Machine Learning**(Maria) Ilastik Automation Training sets Unsupervised analysis Interpretation of results
10:00-11:00		Measurements and Statistics (Rainer) metric measurements Phantoms and Standards translating images into results	Quantitative Images (Felix) Photometry Spectral images Crosstalk Transformations	**Objects** (Felix & Kay) Counting cells and nuclei Separating connected objects Tracing & tracking Area & Volume Distances and positions Fluorophore counting Automate these tasks Control constructs
11:00-12:00	Pre-Processing (Kay) Capturing & Image Formation ,Noise limits Diffraction Nyquist sampling Formation Noise limits Diffraction Nyquist sampling	Lecture: Diffraction and aberration(PC) Imaging modes & contrast techniques	**Microscopy Images**(PC) Resolution Optical artifacts Diffraction & image Regularization	Image Data Management, Image Pipeline Citable Code, Data Sharing(Kobrinian)
12:00-13:00	**lunch (**Homework Lunch)	**Lunch (**Homework Lunch)	**Lunch (**Homework Lunch)	**Lunch (**Homework Lunch)

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13:00-14:00	**ImageJ Basics** (Edna/Rafael) Operations Metadata Control constructs(1-2 hours) Workflow	**Deconvolution(Rainer)(2 hours?)**	**Scripting Intermediate (Felix, Rafael)** **(1 hour)**	**Application Talk**, Romain Lain, Google Colab, ZeroCostDL4Mic
14:00-15:00		**ImageJ Macro Recording, Scripting Intermediate (Rafael,Felix) (1 hour?)**	**NIS Elements** (Dominik **(1 hour)** Sequences and Series Scripts 3rd party hardware	**Application Talk** Øyvind Øde gård Fougner , Machine Learning Application
15:00-17:00	**Cell Profiler (2-3 hours)** (Anna/Laura/Marie)	**Illasik(Maria,Rafael) (1 hour?)**	**Imaris in Depth(2 hours)** Guergana , Frode) Imaris 3D Data Set Processing and Analysis	**Student Presentations (End at 4pm)** Demonstrate an applied technique or problems you are dealing with **Closing Remarks(Oddmund)**
	Homework Evening	Homework Evening	Homework Evening	Homework Evening
17:30-19:00			Optional (Julia Demonstration), https://julialang.org/ Rainer.	
Objective of the Day	Understand the nature of images Embrace the processing workflow Be able to automate tasks and to control and modify the dataflow	Adopt data driven concepts Understand the nature of noise and diffraction Levy numerical data from your image data	Understand image quality and limitations Grasp the resolution / localization dichotomy Get a handle on quantification and data reliability	Getting an cursory overview of machine learning Doing quantitative counting and measurements Understanding the limitations Performing hands-on works

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			Get an intro to NIS and IMARIS	