

# Course “Functional OMICs”

May 23-27, 2022  
 Institut Pasteur de Tunis

May 23 <sup>rd</sup> , 2022 Functional annotation of biological data (Computer Room, Research and Training Building)		
	Session	Speakers
9:00-10:15	Introduction to biological databases and annotations: - <i>History, definitions, principles</i>	Natalia Pietrosemoli, IP
10:15-10:45 Coffee break		
10:45-12:00	Hands-on 1: - <i>Annotation of model organisms (GO)</i> - <i>Annotation of non-model organisms (Kegg)</i>	Natalia Pietrosemoli, IP Claudia Chica, IP
12:00-13:30 Lunch		
13:30-14:45	Gene sets: - <i>What, why, how</i>	Natalia Pietrosemoli, IP
14:45-15:15 Coffee break		
15:15-16:30	Hands-on 2: - <i>Advanced functional annotations</i>	Natalia Pietrosemoli, IP Claudia Chica, IP

<b>May 24<sup>th</sup>, 2022</b> <b>Functional analysis</b> <i>(Computer Room, Research and Training Building)</i>		
	Session	Speakers
9:00-10:15	Functional analysis methods - <i>Over-representation analysis (ORA)</i> - <i>Functional Class Scoring (FCS)</i>	Natalia Pietrosevoli, IP
10:15-10:45 Coffee break		
10:45-12:00	Functional analysis tools - <i>DEMO ORA</i> - <i>DEMO FCS</i>	Natalia Pietrosevoli, IP
12:00-13:30 Lunch		
13:30-14:45	Hands-on 1: - <i>Integrating OMIC data with functional analysis methods</i>	Natalia Pietrosevoli, IP Claudia Chica, IP
14:45-15:15 Coffee break		
15:15-16:30	Hands-on 2: - <i>Functional analysis for epigenOMICS</i>	Claudia Chica, IP Natalia Pietrosevoli, IP

<b>May 25<sup>th</sup>, 2022</b> <b>Multivariate methods for OMIC exploration and integration</b> <i>(Computer Room, Research and Training Building)</i>		
	Session	Speakers
9:00-10:15	Methods for OMIC exploration: - <i>Single OMICS (PCA, PLS-DA)</i>	Claudia Chica, IP
10:15-10:45 Coffee break		
10:45-12:00	Hands-on 1: - <i>Biomarkers discovery with PLS-DA on RNAseq</i>	Claudia Chica, IP Natalia Pietrosevoli, IP

<b>12:00-13:30 Lunch</b>		
<b>13:30-14:45</b>	<b>Methods for OMIC integration:</b> <ul style="list-style-type: none"> <li>- <i>Multi OMICs integration (MFA, ICA)</i></li> </ul>	<b>Claudia Chica, IP</b>
<b>14:45-15:15 Coffee break</b>		
<b>15:15-16:30</b>	<b>Hands-on 2:</b> <ul style="list-style-type: none"> <li>- <i>Identification of regulatory modes with MFA/ICA</i></li> </ul>	<b>Claudia Chica, IP Natalia Pietrosemoli, IP</b>

<b>May 26<sup>th</sup>, 2022</b>		
<b>Biological networks</b>		
<b>(Computer Room, Research and Training Building)</b>		
	<b>Session</b>	<b>Speakers</b>
<b>9:00-10:15</b>	<b>Introduction to biological networks</b> <ul style="list-style-type: none"> <li>- <i>Network theory</i></li> <li>- <i>Biological network resources</i></li> </ul>	<b>Claudia Chica, IP Natalia Pietrosemoli, IP</b>
<b>10:15-10:45 Coffee break</b>		
<b>10:45-12:00</b>	<b>Hands-on 1:</b> <ul style="list-style-type: none"> <li>- <i>Protein-Protein Interaction Networks</i></li> </ul>	<b>Natalia Pietrosemoli, IP Claudia Chica, IP</b>
<b>12:00-13:30 Lunch</b>		

<b>May 27<sup>th</sup>, 2022</b>		
<b>Biological networks</b>		
<b>(Computer Room, Research and Training Building)</b>		
	<b>Session</b>	<b>Speakers</b>
<b>9:00-10:15</b>	<b>Linkage studies (for mendelian traits) - principles</b>	<b>Pascal Campagne, Amaury Vaysse, Emmanuelle Permal, Victoire Baillet</b>
<b>10:15-10:45 Coffee break</b>		

<b>10:45-12:00</b>	<b>Protein-Protein Interaction Networks:</b> <ul style="list-style-type: none"><li>- <b>Computational analysis</b></li><li>- <b>Network propagation</b></li><li>- <b>Identification of functional modules</b></li></ul> <b>ConsensusPathDB and NetCore</b>	<b>Ralf Herwig (remote)</b> <b>Max Planck Institute</b>
<b>12:00-13:30 Lunch</b>		
<b>13:30-14:45</b>	<b>Round table</b> <ul style="list-style-type: none"><li>- <b>Q&amp;A</b></li><li>- <b>Feedback</b></li></ul>	<b>Natalia Pietrosevoli, IP</b> <b>Claudia Chica, IP</b>
<b>14:45-15:15 Coffee break</b>		