

BIO334 – Practical Bioinformatics

Wagner's module

Metabolic network analysis

Metabolic network analysis

With:

- Python 3

OLAT: Python_trainer

Python cheatsheet

Reminder presentation

Metabolic network analysis

With:

- Python 3

 - OLAT: Python_trainer_2016

 - Python cheatsheet

 - Reminder presentation

- Cobrapy (python package)

 - OLAT: cobrapy_documentation.pdf

 - <https://cobrapy.readthedocs.io/en/latest/>

Metabolic network analysis

With:

- Python 3

OLAT: Python_trainer_2016

Python cheatsheet

Reminder presentation

- Cobrapy (python package)

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OLAT: software_requirements_bio334_AW.txt
and cobrapy_installationInstructions.txt

Exercises

Exercise 1 - Introduction to metabolic networks and metabolic network analysis (Get feedback on openedx!)

Exercise 2 - Analyzing simple biological networks

Exercise 3 - Biomass reaction constituents

Exercise 4 - Carbon sources of *E. coli*

Exercise 5 - Drug design

How to..? (Also on cheat sheet...)

Build model and include external reactions - **1.3**

Read model and optimize - **1.5**

Essential reactions - **1.6**

Active reactions - **1.7**


Flux Variability Analysis (FVA) - **1.8**

Modify constraints on reactions - **1.9**

Plot - **2.6**

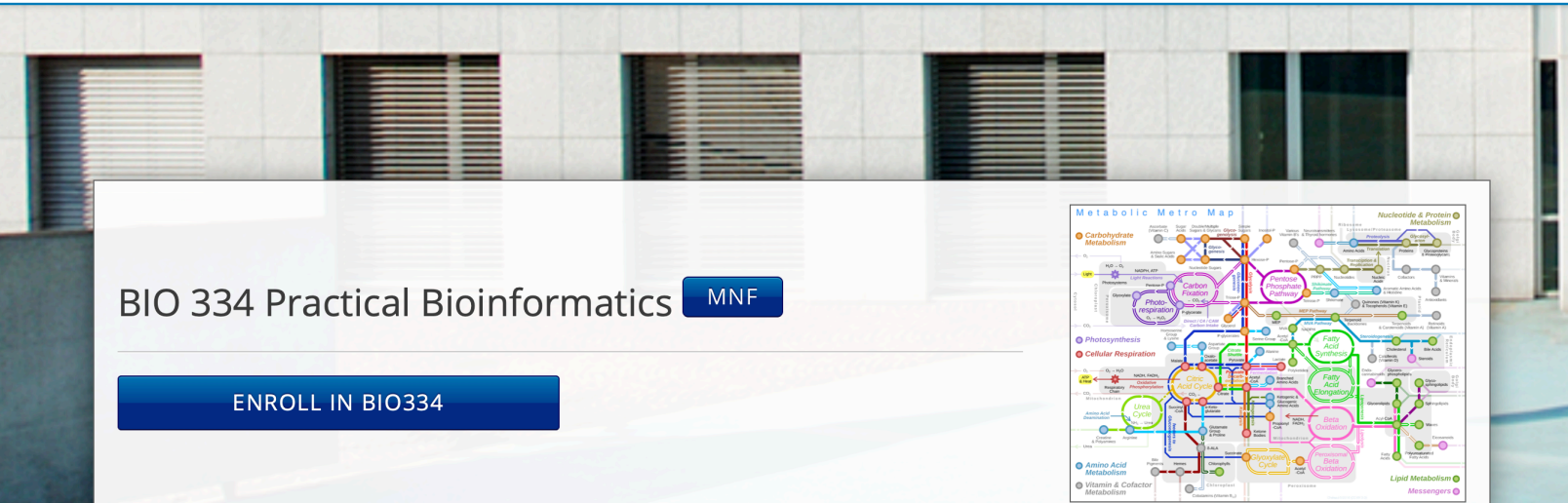
Check your understanding on openedx

<https://mnf.openedx.uzh.ch/courses/course-v1:MNF+BIO334+FS2021/about>

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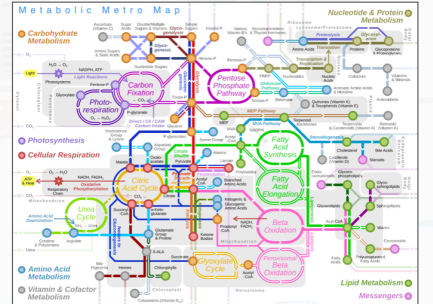
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BIO 334 Practical Bioinformatics MNF

ENROLL IN BIO334



About This Course

An opportunity for students enrolled in Bio 334 to check their understanding of flux balance analysis.

This online component is not assessed.



Course Number **BIO334**

Classes Start **Jan 1, 2021**

Does not count to your final mark!

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[Course](#) > [Flux balance analysis](#) > [Conceptual quiz](#) > [Unit](#)

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Multiple Choice

0/1 point (graded)

What are the fundamental assumptions of flux balance analysis?

- ☐ Metabolism is in a steady state
- ☐ Metabolites accumulate to be converted optimally into biomass later
- ☐ Cells use metabolism to maximize a property, such as growth
- ☐ Cells try to use as few resources as possible

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[← Previous](#)



[Next →](#)

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Numerical Input

2/4 points (graded)

Exercise 1.1.

a) For the reaction network in figure 1, draw the stoichiometric matrix manually (feel free to show non-zero entries only). Here you can check a few entries from the stoichiometric matrix.

What is the stoichiometric coefficient for reaction R5f (in the forward direction) and metabolite F?

What is the stoichiometric coefficient for reaction R9 and metabolite D?

We are also reachable on Slack...

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Last comments

- Take breaks when needed
- At the end of day, let us know how far you have gotten
(mark only last question completed!)

