2: Predict localization (de novo)

short title: cb2_localization1

lecture: Protein Prediction 2 (for Computer Science) - Protein function
TUM winter semester
Announcements

Videos: YouTube / www.rostlab.org

THANKS: Tobias Olenyi

Special lectures:
- none planned

No lecture:
- 10/31 THU All Saints
- 11/12 THU SVV (student rep)
- 11/28 THU Thanksgiving
- 12/05 THU TUM Dies Academicus
- 12/19-01/07 - no lecture Xmas+

LAST lecture: Jan 21 (followed by 2 wrap-up sessions)

Examen:
- Jan 30 11:00-13:00 Room LMU Physics HS019
- Makeup: NOT (emergency: Apr 21 & Apr 23, 2020 lecture time)
III. Predict Sub-cellular localization
Words

- by homology
- de novo
- ab initio
III.1 Predict localization: the problem
Protein synthesis (labels in black)
1. DNA
2. DNA polymerase
3. single-stranded-DNA binding protein (protects single-stranded portions during replication)
4. RNA polymerase
5. messenger RNA
6. ribosome
7. transfer RNA (in pink) and elongation factor Tu and Ts
8. elongation factor G
9. aminoacyl-tRNA synthetases
10. topoisomerases
11. Rec system for DNA repair: a) RecA, b) RecBC
12. chaperonin GroEL (helps folding of newly synthesized proteins)
13. proteasome ClpA (destroys old proteins)

Enzymes for energy production (labels in red)
14. glycolytic enymes
15. pyruvate dehydrogenase complex

Membrane proteins (labels in blue)
16. ATP synthase
17. secretory proteins
18. sodium pump
19. zinc transporter
20. magnesium transporter
21. ABC transporter (different ABC transporters transport different types of molecules-ABC is short for “ATP-binding cassette”)
22. lypoglycan (long carbohydrate chains connected to lipid in the membrane)
Prokaryotic cell (E. coli)

http://www.uic.edu/classes/bios/bios100/lectures/cells.htm
Cellular compartments/localization

Prokaryotic Cell
(bacillus type)

Eukaryotic Cell

K Rogers (2011) Britannica

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Localization: simplistic perspective
preliminary Lecture plan (PP2 function)

01: 2019/10/15: No lecture (makeup examen: PP last year)
02: 2019/10/17: No lecture (makeup)
03: 2019/10/22: No lecture
04: 2019/10/24: Welcome: who we are
05: 2019/10/29: Intro function 1: concept of protein function
06: 2019/10/31: No lecture (holiday, All Saints)
07: 2019/11/05: Intro function 2: homology-based inference
08: 2019/11/07: Localization 1 (chalk talk)
09: 2019/11/12: No lecture (SVV)
10: 2019/11/14: Localization 2 (homology, motifs)
12: 2019/11/21: Localization 4
13: 2019/11/26: Localization 5
14: 2019/11/28: No lecture (Thanksgiving)
15: 2019/12/03: Localization 6
16: 2019/12/05: No lecture (Dies Academicus)
17: 2019/12/10: PPI 1 - sites (chalk)
18: 2019/12/12: PPI 2 - sites / PPI pairing
19: 2019/12/17: PPI 3 - sites / DNA / RNA (Jia Jun Qiu)
20: 2019/12/19: No lecture
22-24: no lectures - winter break (2019/12/24 - 2020/01/06)
25: 2020/01/07: No lecture
28: 2020/01/09: PPI 4 - sites: DNA / RNA (Jia Jun Qiu) + PPI pairing 1
29: 2020/01/14: SAV effect 1 (chalk talk)
30: 2020/01/16: SAV effect 2
31: 2020/01/21: SAV effect 3
32: 2020/01/23: WRAP up 1
33: 2020/01/28: WRAP up 2
34: 2020/01/30: Examen (10:00-13:00, lecture room TBA - LMU physics?)
35: 2020/02/04: TBA
36: 2020/02/06: TBA