Reflect: an augmented browsing tool for life scientist

Janos Binder

Schneider‘s group

EMBL

Outline

- Short introduction Reflect
- Advanced features and the back-end
- Planned new features

Life Science Data

Galperin, Cochrane

Nucleic Acids Research annual Database Issue and the NAR online Molecular Biology Database Collection in 2011

Lists 1330 actual databases

Gary Benson

Nucleic Acids Research annual Web Server Issue in 2011 , Nucl. Acids Res. 2011

Lists more than ~3200 web servers

http://nar.oxfordjournals.org

EMBL

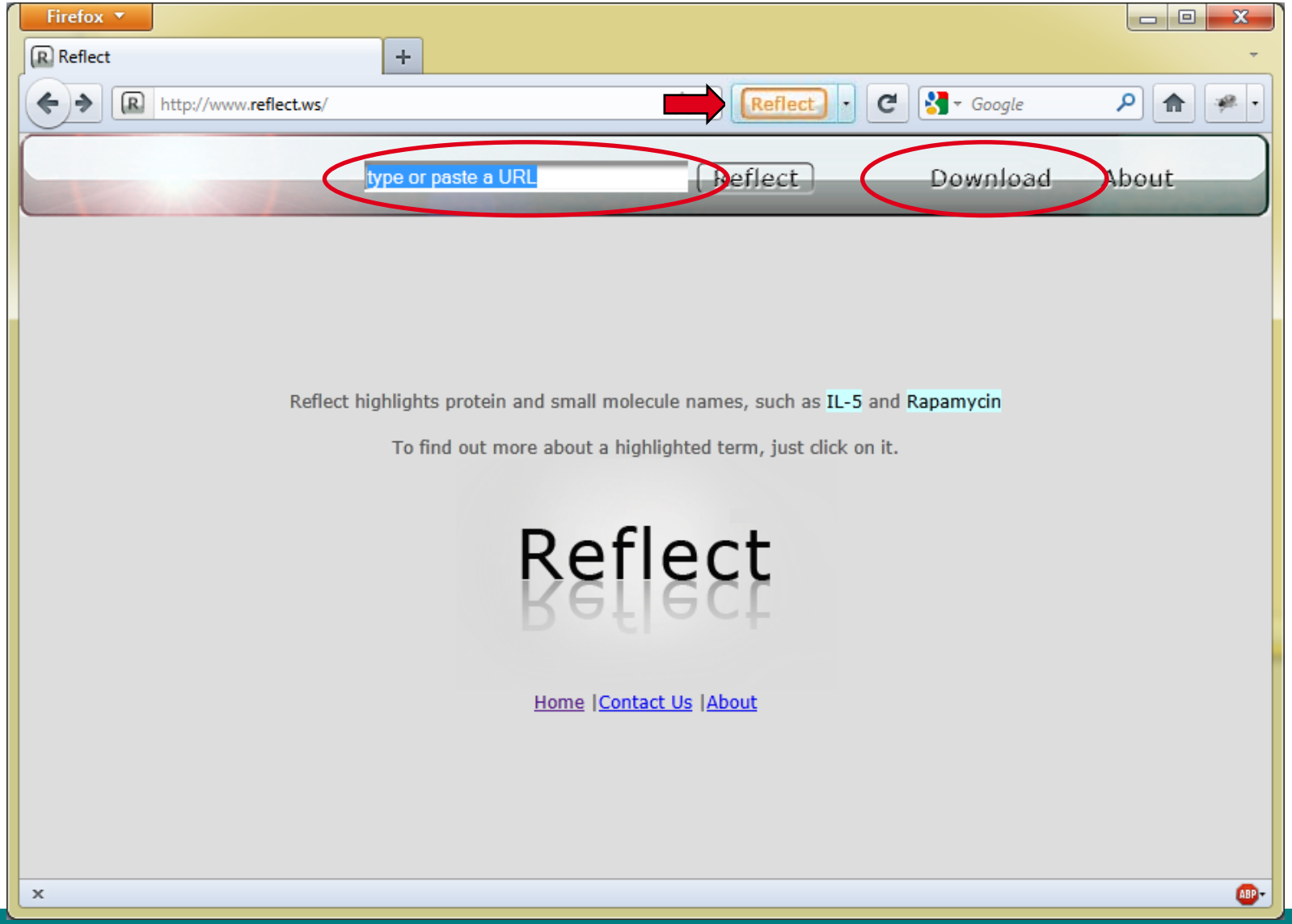

INFO OVERLOAD

Design criteria for Reflect

Keep it simple

Interactive

www.reflect.ws

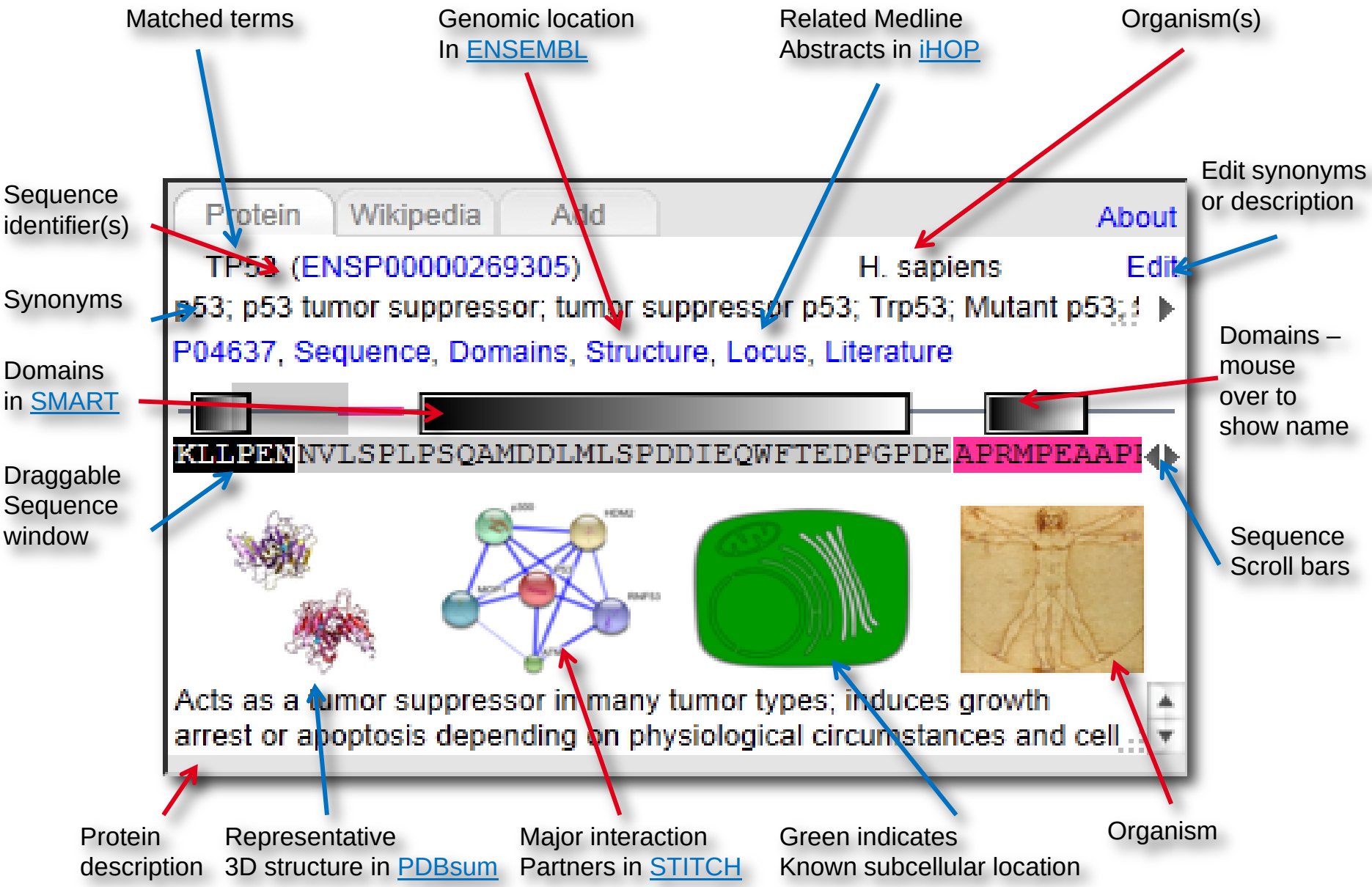


EMBL

Reflect in action

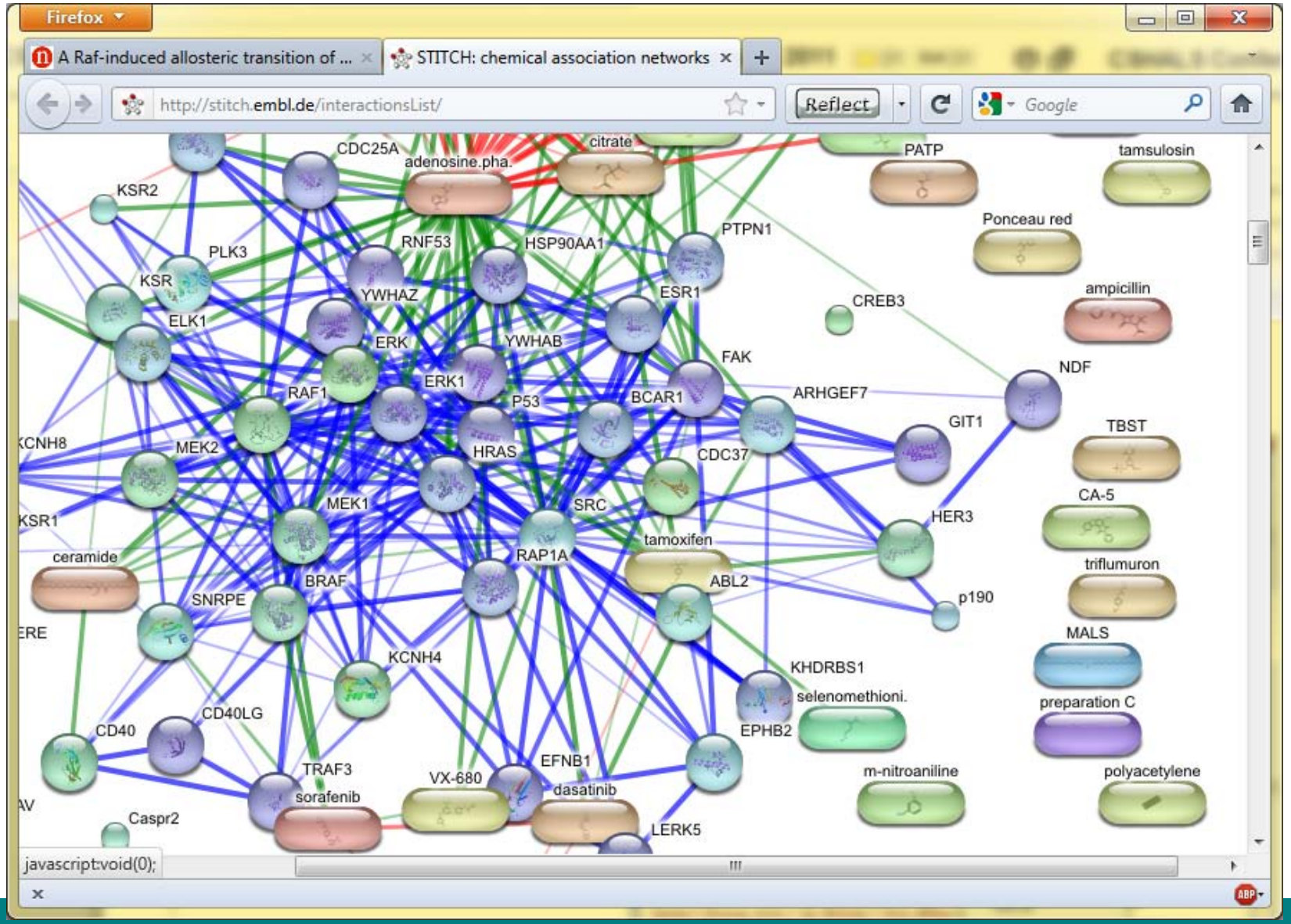
Pafilis E. et al. (2009)

EMBL


Matched terms
Genomic location
In ENSEMBL
Related Medline
Abstracts in iHOP
Organism(s)
Edit synonyms
or description
Sequence
identifier(s)
Synonyms
Domains
in SMART
Draggable
Sequence
window
Domains –
mouse
over to
show name
Sequence
Scroll bars
Protein
Wikipedia
Add
About
(ENSP00000269305)
H. sapiens
Edit
p53; p53 tumor suppressor; tumor suppressor p53; Trp53; Mutant p53;
P04637, Sequence, Domains, Structure, Locus, Literature
KLLPENNVLSPLPSQAMDDLMLSPDDIEQWFTEDPGPDE
Acts as a tumor suppressor in many tumor types; induces growth
arrest or apoptosis depending on physiological circumstances and cell
Protein
description
Representative
3D structure in PDBsum
Major interaction
Partners in STITCH
Green indicates
Known subcellular location
Organism

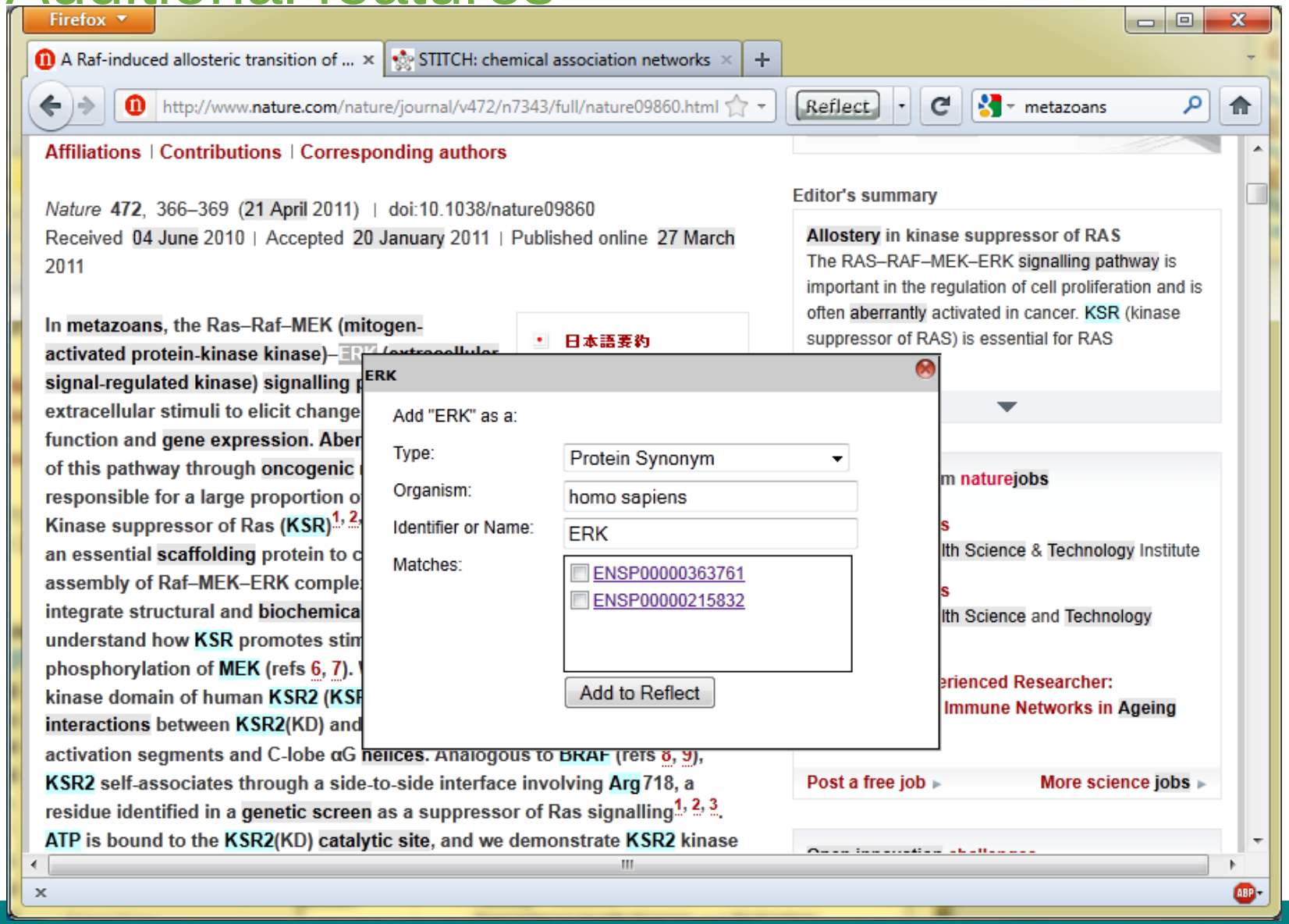
EMBL

Additional features



EMBL

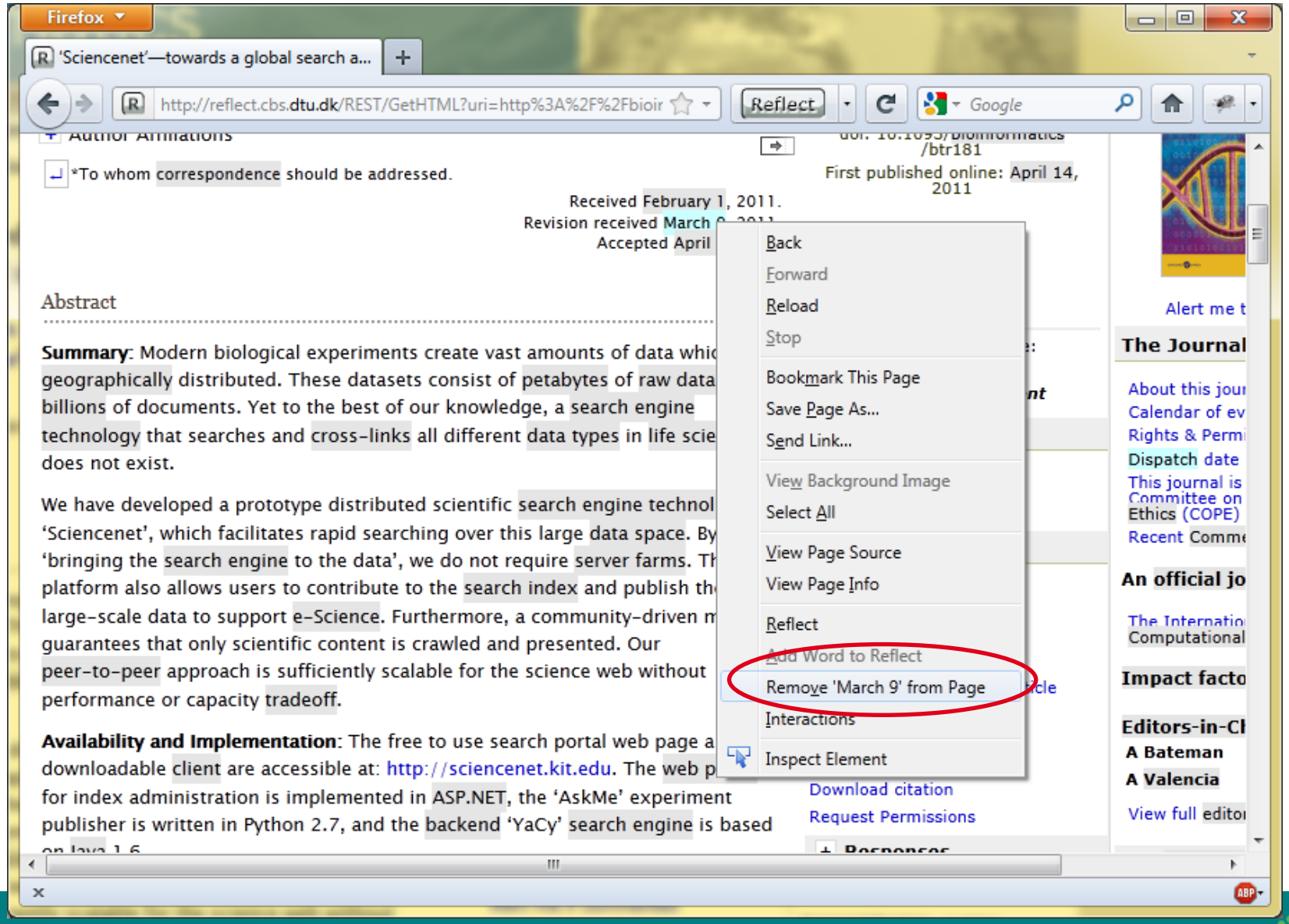
Additional features



O'Donoghue, S. I., et al. (2010)

EMBL

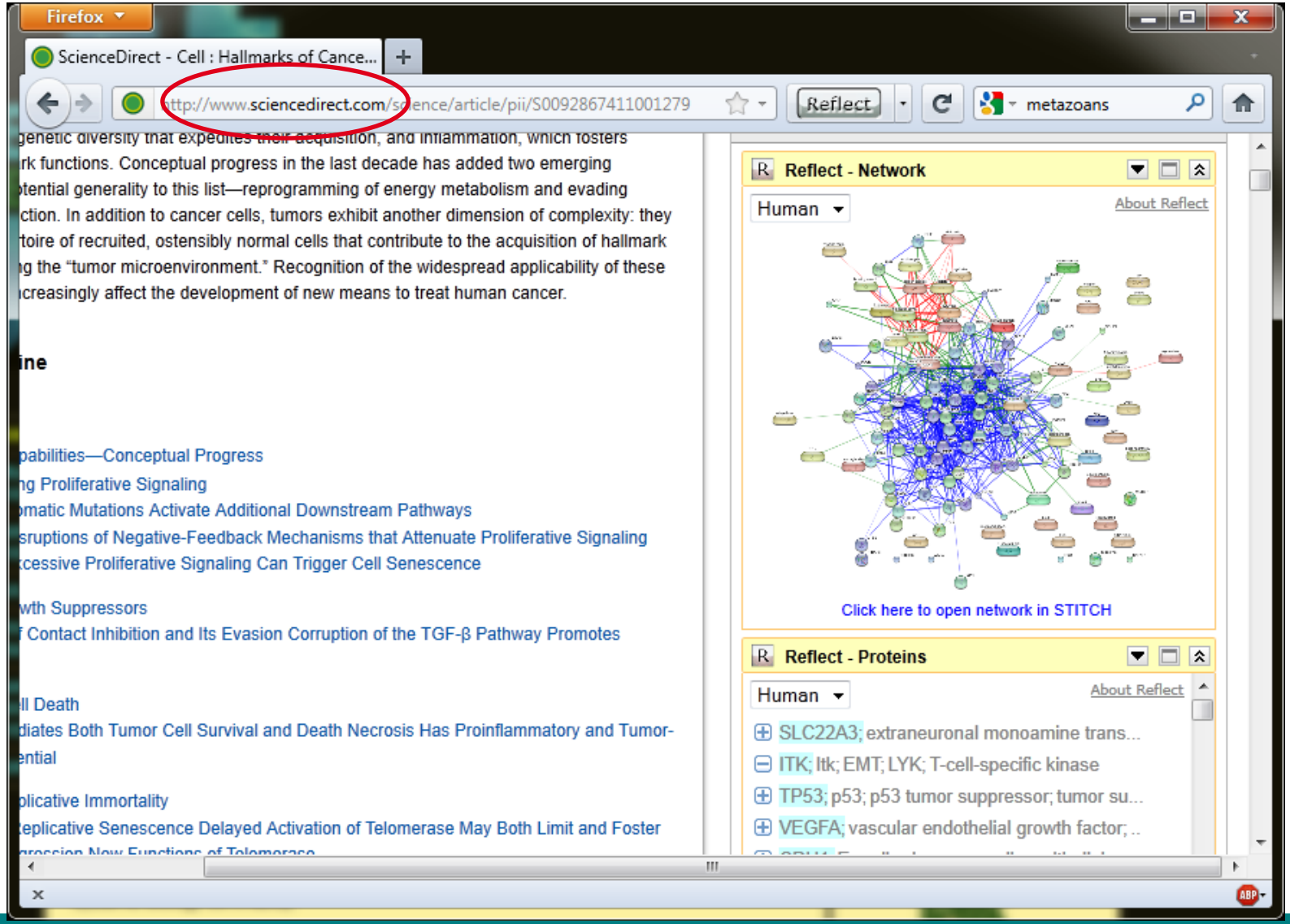
Additional features



O'Donoghue, S. I., et al. (2010)

EMBL

Examples for API calls



O'Donoghue, S. I., et al. (2010)

EMBL

Technical parts – the back-end

- Main parts: Tagging server and Queuing server
- Some statistics after 5,5 Gb of RAM usage

	Proteins	Chemicals	Wikipedia
Entities	2,634,843	7,420,623	3,358,653
Names	20,673,223	24,251,406	7,611,364

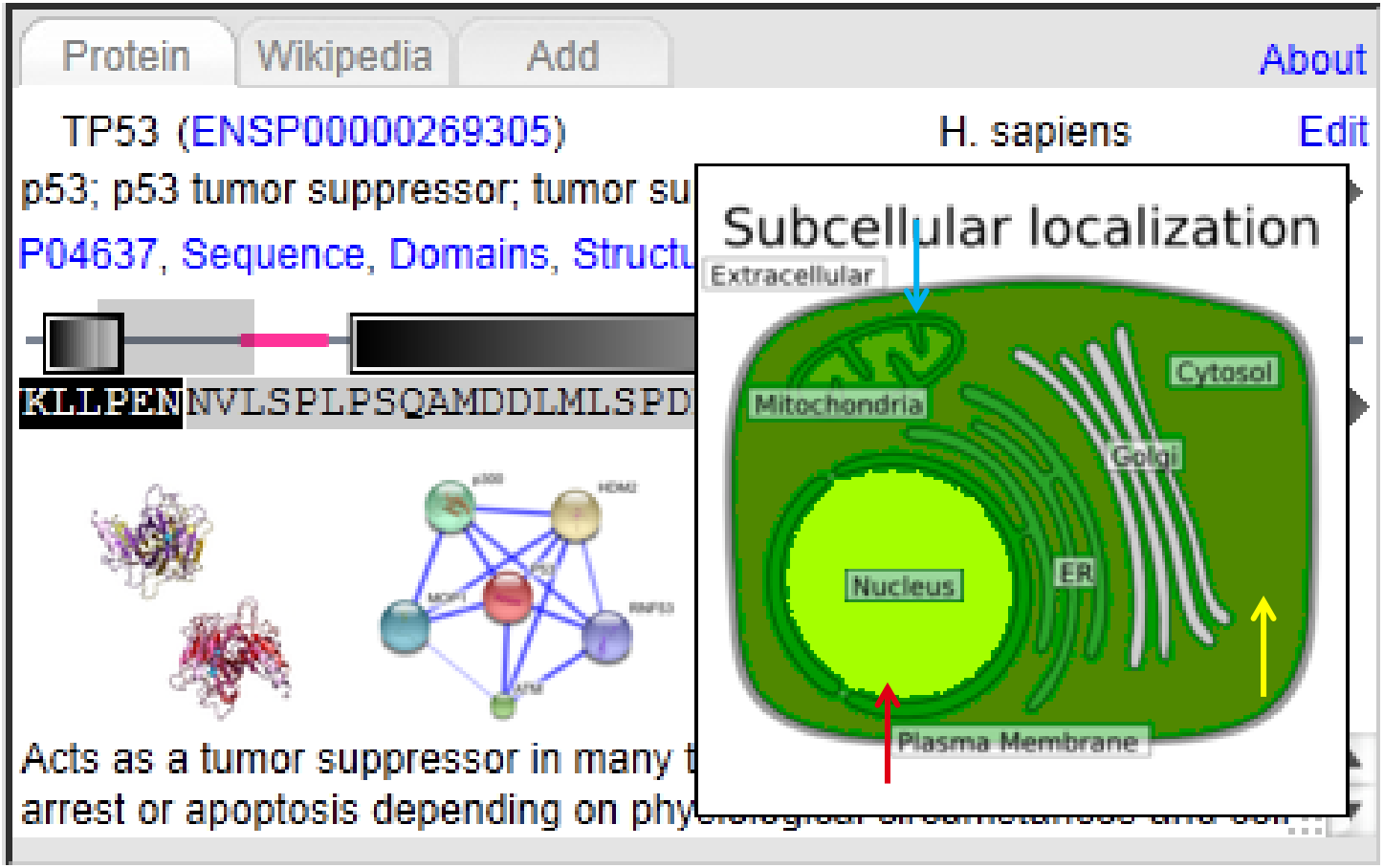
- Tagging speed

	Tagging time in seconds
Full scientific paper (~ 10,000 words)	0.3 s
Typical web page (<1,000 words)	0.075 s

- Tagging is usually faster than the data transfer

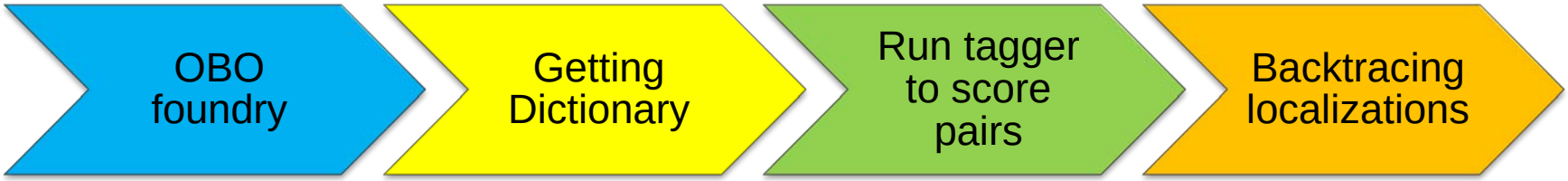
Mock-up screenshot of Reflect

- Subcellular localization

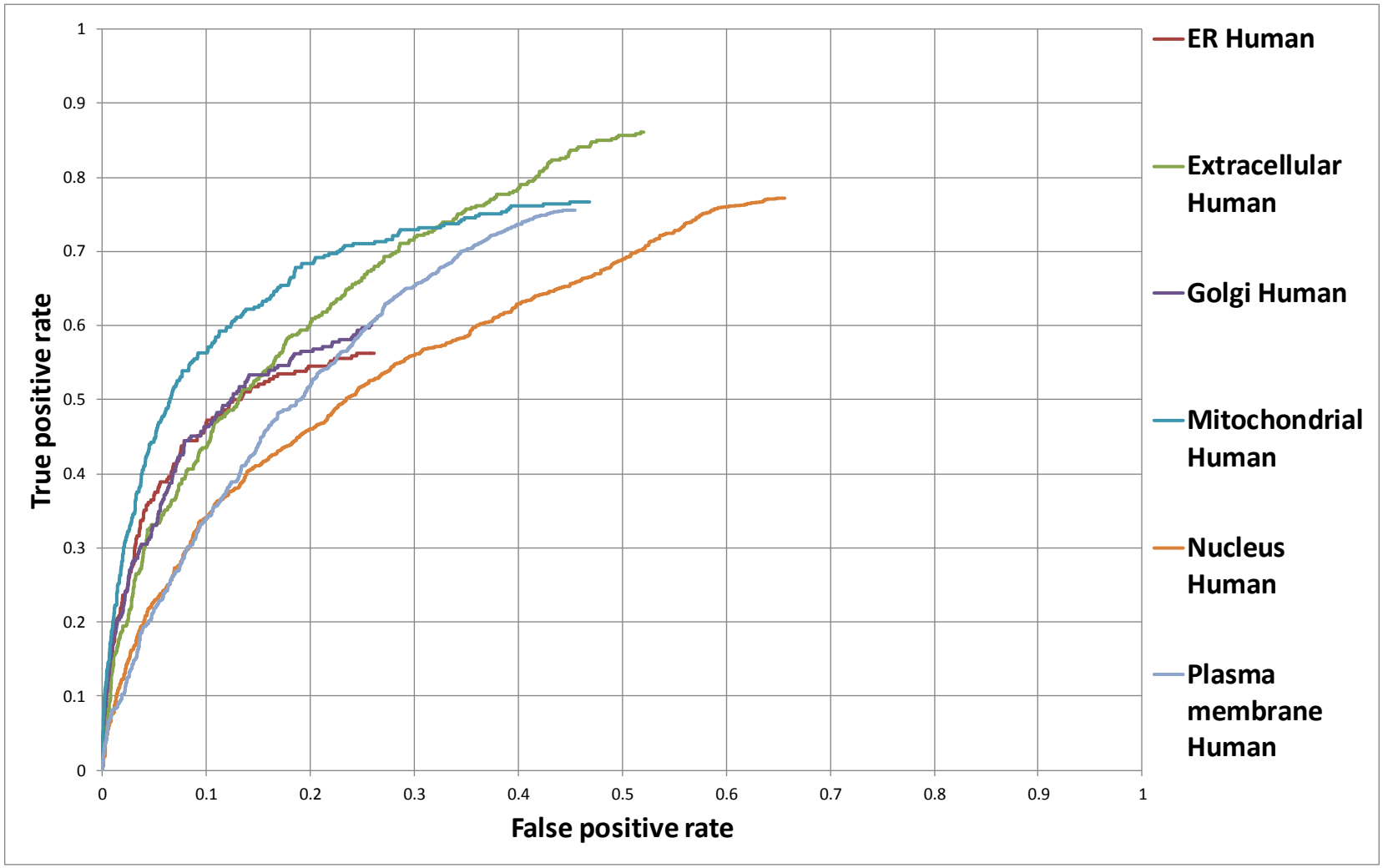


EMBL

Subcellular localization - Pipeline



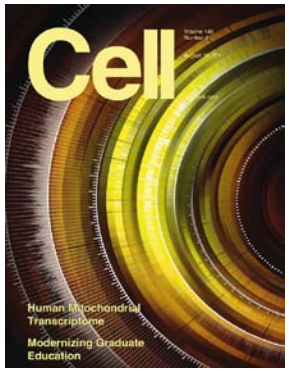
Receiver operating characteristic plot

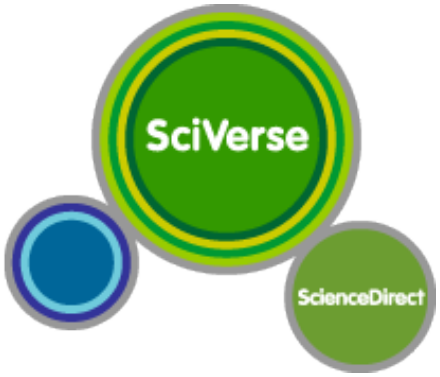


EMBL

Projects using Reflect

- OnTheFly: http://onthefly.embl.de
- Reflect Gadgets: http://www.sciencedirect.com
- Article of the Future: http://www.cell.com
- ScienceNet: http://sciencenet.kit.edu





- Reflect browser plugins: http://www.reflect.ws
- Reflect API: http://bit.ly/reflectapi
- Contact: contact@reflect.ws

Acknowledgements

- EMBL
  - Reinhard Schneider
  - Venkata Satagopam
  - Maria Secrier
  - Seán O'Donoghue
  - Jose Carlos Villacorta Martin
  - Enrico Glaab
  - Frederico Arnoldi
- University of Copenhagen
  - Lars Juhl Jensen
  - Sune Pletscher-Frankild
  - Heiko Horn