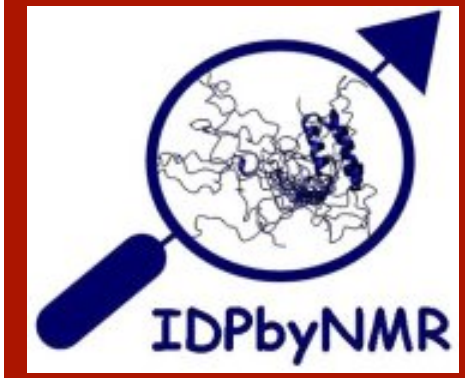

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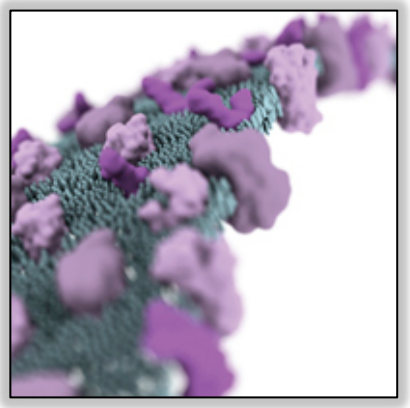
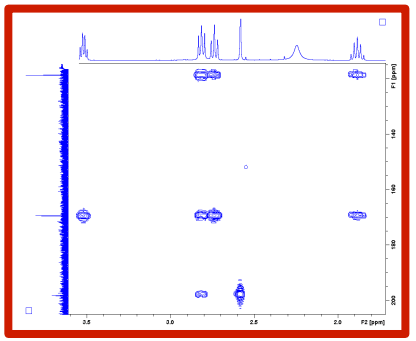
IDPbyNMR – *in Brussels*

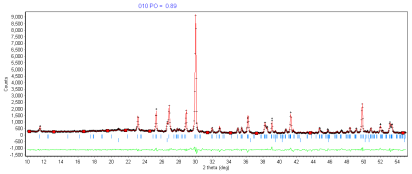
Cesyen Cedeño
ESR
Vlaam Instituut voor Biotechnologie
Department of Structural Biology – Brussels
(Vrije Universiteit Brussels)
Tompa Group



Research experience

- X-ray crystallography
  - Semiconductors (since 1999 as high-school student)
  - Small molecules – Drugs
- Organic Chemistry: synthesis
  - N, S containing rings, chelates and metal binding.
    - NMR, 1D and 2D.
- Bioinformatics: IDPs occurrence in neglected diseases related parasites
- Extra lectures in Biology: physiology, biochemistry, analytical techniques, neuroscience… **WHY?**





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…competences

- The chemist point of view allowed me make approaches in a different way (creativity) within a traditional environment (science faculty in Venezuela). Intellectually stimulant…
  - However, structural biology is an unexplored field in my country.
  - Previous experience in bioinformatics taught me that IDPs is a challenging field… and needs encouraged people!

So, I am **strongly** looking forward to…

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…my contribution

- Bring my academic background and working experience to enrich the field of IDPs.
- Establish collaborations within IDPbyNMR to ease the flow of information… Networking – **MULTIPARAMETRIC** aproach!
- Support training activities in my center (Department of Structural Biology) that could evolve in group expansion. (e.g. teaching activities and MSc students training).
- Create links with external labs…
  - FMP Berlin
  - Poland…
  - Marseille…

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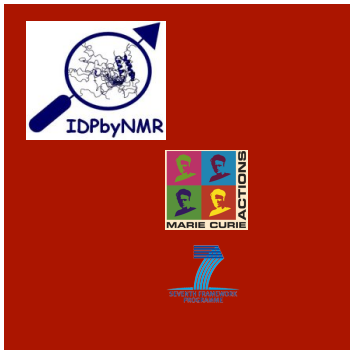
From you… I am expecting:



- Transfer of knowledge… most of the experts dedicated to this field are gathered here.
  - The European infrastructure is able to support long term projects
- The possibilities to develop a career/life are only delimited by my personal aims…
- Cultural exchange…

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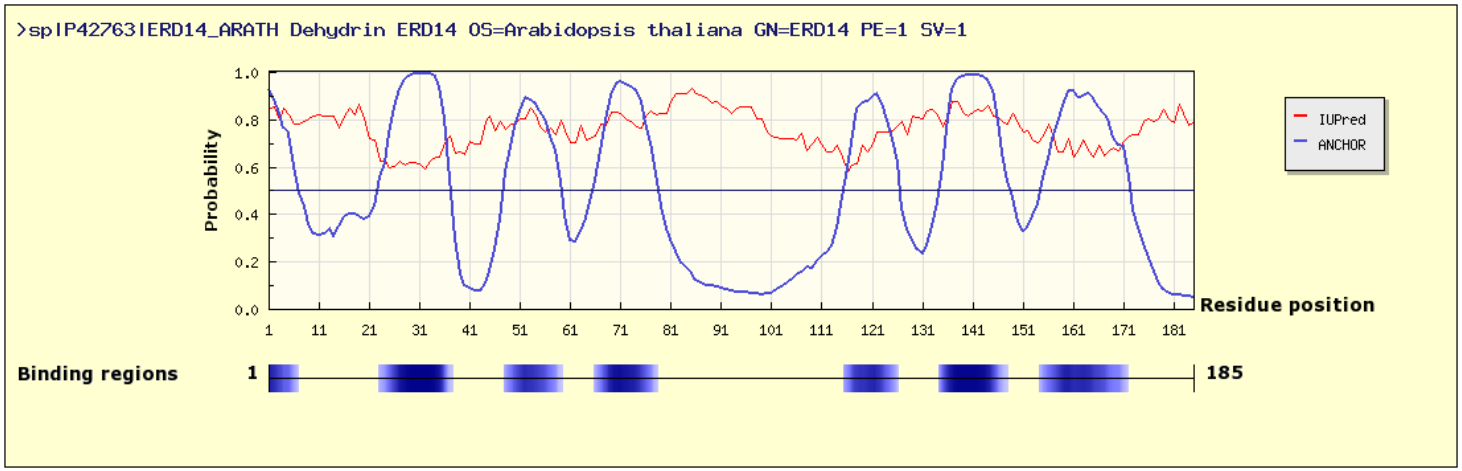
ERD14

- Dehydrins are plant chaperones… (K_3S)



PFAM – P00257 - Dehydrins are a family of proteins present in plants that are produced in response to low temperatures and drought stress. They may do this through protecting membranes from damage.[1] Their production is induced by ABA and in response to salt. Dehydrins in barley and maize are extremely hydrophilic and glycine-rich.[2] They may also play a role in allowing plants to tolerate high salt concentrations.[3]

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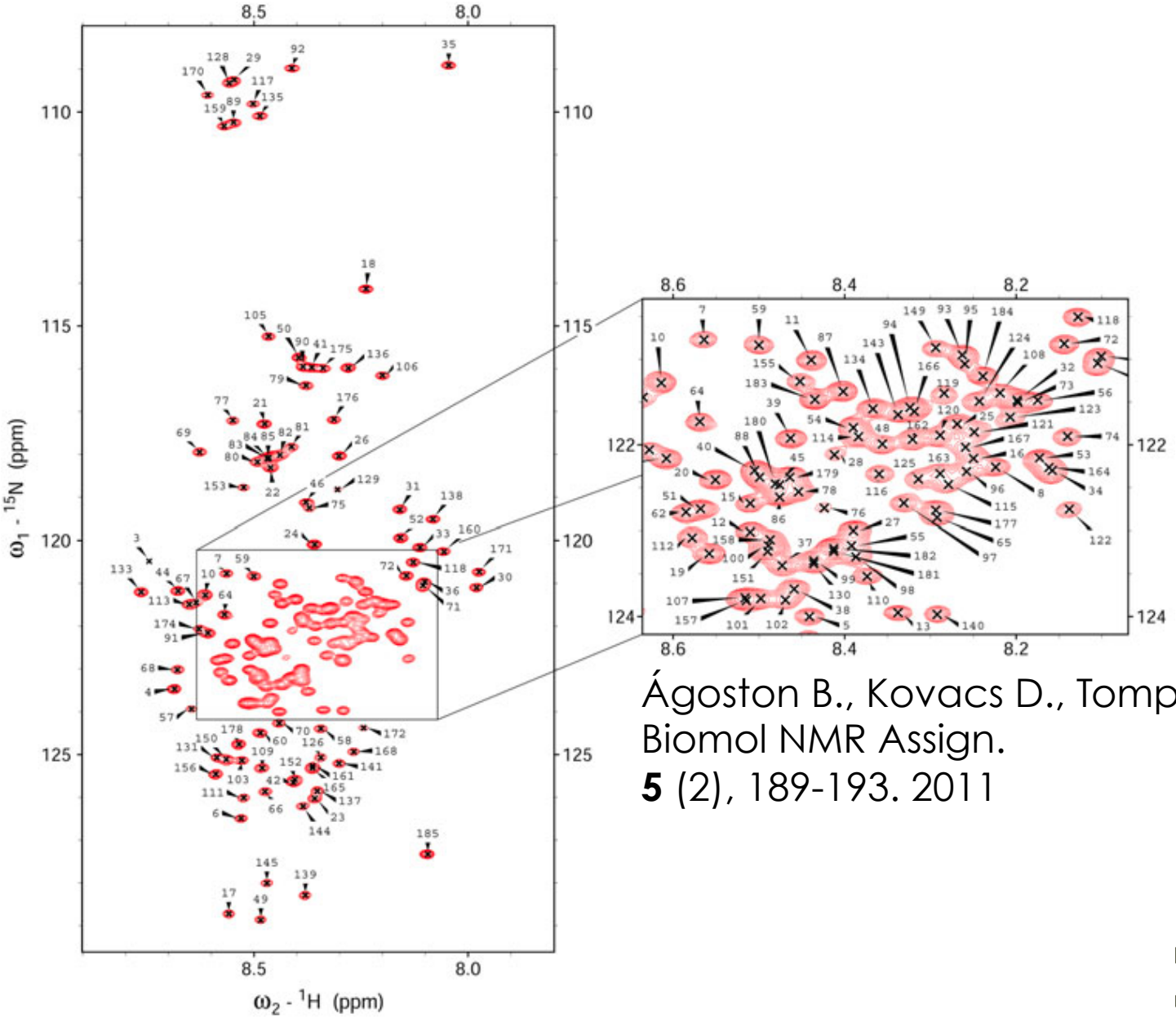
Full backbone assignment and dynamics of the intrinsically disordered dehydrin ERD14



Ágoston B., Kovacs D., Tompa P., Perczel A. Biomol NMR Assign.
5 (2), 189-193. 2011

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ERD14

- ***in-cell* NMR**: What are the actual circumstances in which ERD14 is highly expressed and accumulated*? But even more important: THE PARTNERS (functionality)? Answer would come partially as a result of cooperation (MCTN…)
  - SOFAST?
  - 13C direct detection? (titration with partners…)
  - Structure calculation/validation?

Phosphorilation (ribosomal protein s6 – Selenko & Binolfi):

…GEKRQEQIAKRRRLSSLRASTSKSESSQK…

Mass spectrometry data suggest that the phosphorylation sites for these three proteins are located in the Ser stutter motif. (metal binding) ***Naturwissenschaften (2007) 94:791–812***

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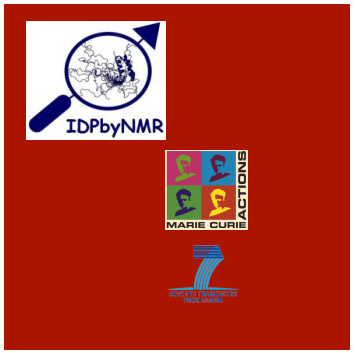

ERD14

- ***Pull down***: What are the actual circumstances in which ERD14 binds? (chaos is **NOT** out of control)
  - …it is important: THE PARTNERS (Mechanism)? Answer would come from our lab (contribution to the network…)
  - Chaperoning could be (stochastic view):
    - Molecular shielding,
    - Maintenance of hydration layer, or even…

(fast + low specificity)
Kovacs Denes

Kind of **Interactomics** approach:

We (VIB- Tompa group) are building up this paltform…
Mass spectrometry, nanotemper, Biacore, cell imaging, ITC, DSC…

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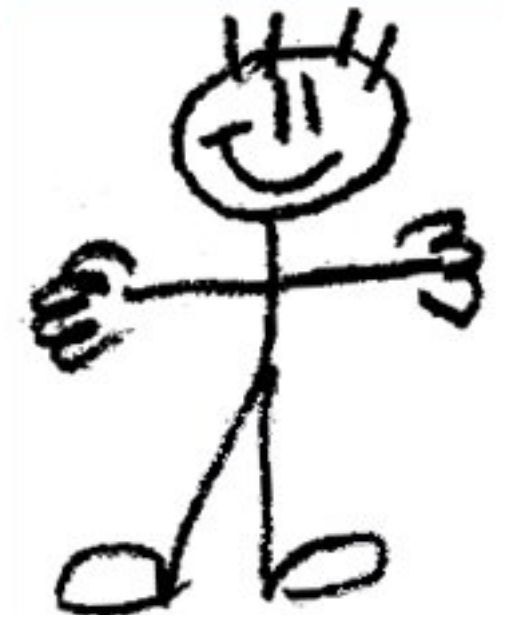

Thank you…!

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