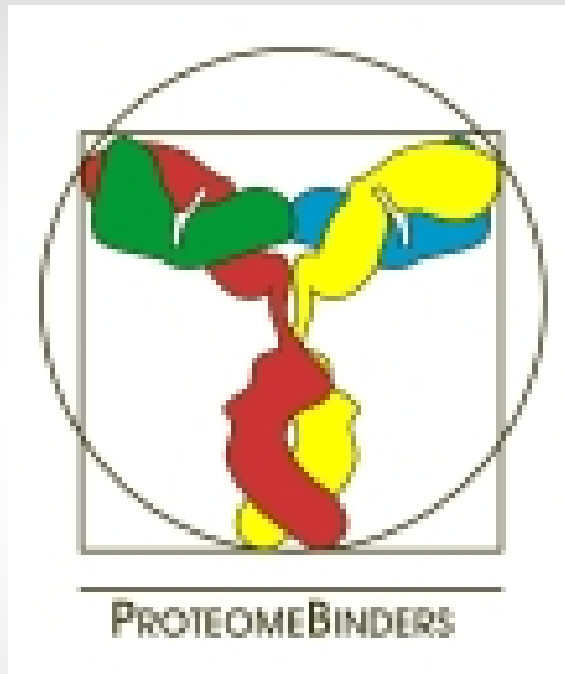
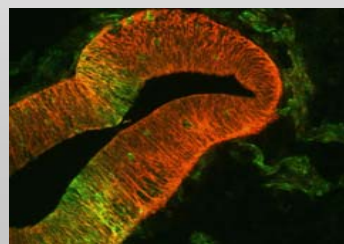
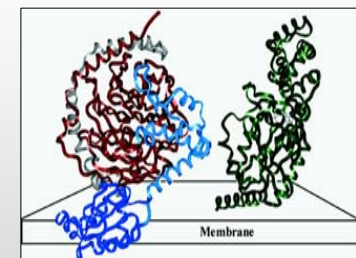
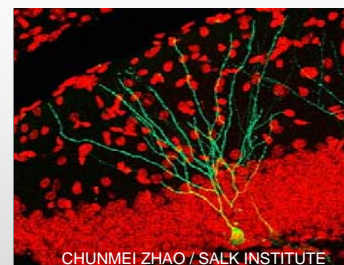
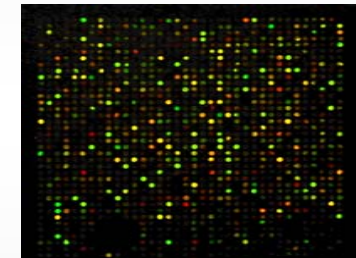
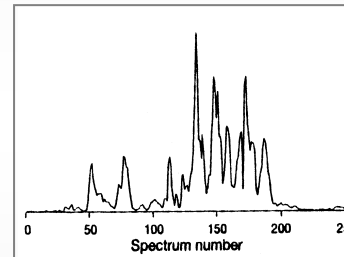
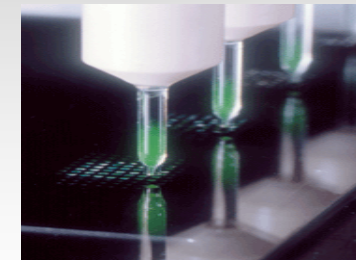
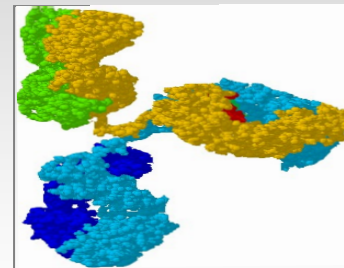


Affinity-Binders



- **Concepts**
- **Technology**
- **Reagents**
- **Applications**



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Concepts & Technology

..a summary



The diversity of binders

- Natural binders
- Recombinant binders
 - Proteins
 - Nucleic acids

Applications in Research

- Detection/Discovery (classical assays)
- Tools for affinity proteomics
- Functional
- Purification
- Functional interference
- Activity patterns
- Complex physiological assays
- Combining functional interference and detection

Perspective:

Quantitative analytical approaches will potentiate systems analysis



Applications in Health and Disease

- Detection/Discovery (diagnostics, clinical chemistry, pathology)
- Discovery of signatures (biomarkers, candidate targets)
- Functional interference (agonistic/antagonistic therapeutics)
- Therapy response prediction (biomarkers)
- Carrier for drugs

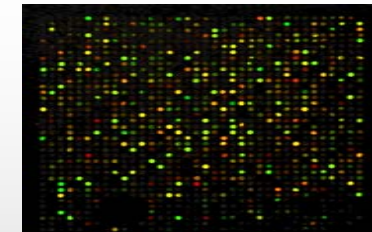
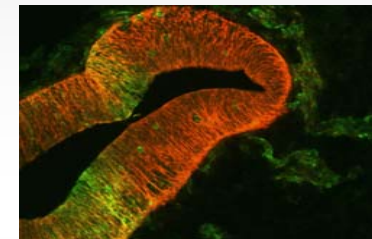
Perspective:

The type of binder chosen will depend on the value stream, cost effectiveness, efforts to generate a binder, fidelity (sensitivity/selectivity)

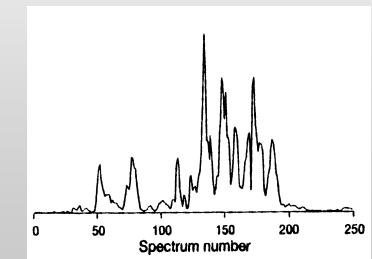
Which is the 21st century binder?



The value of a binder technology cannot be uncoupled from its designated application!
- as well as its (cost) effectiveness



Basic Research in the Life Sciences
Diagnostics in Laboratory Medicine
Diagnostics in Pathology
Biomarker Validation
Pharmacological Target Identification and Analysis
Therapeutic applications



Which is the 21st century binder?



The value of a binder technology cannot be uncoupled from its designated application!
 As well as its (cost) effectiveness

Antibody not in the protein atlas but from publication:
 Against **CCT8** (from publication: "Affinity proteomics for systematic protein profiling of chromosome 21 gene products in human tissues" MCP, 2003)

Antibodies from protein atlas:

#	Gene name	Description	Chr	Links	Antibody ID	Validation
1	SPP1	Osteopontin precursor (Bone sialoprotein-1) (Secreted phosphoprotein 1) (SPP-1) (Urinary stone protein) (Nephropontin) (Uropontin).	4:q22.1			

The Protein Atlas project

Mathias Uhlen, KTH Stockholm
 (www.proteinatlas.org/)

Rationales for Applications



Bottlenecks in Proteomics:

Biological complexity

Analytical depth

Limitations of qualitative analysis

Solutions:

Reduction of complexity: affinity based

Sensitivity combined with selectivity

Quantitative analysis

But:

The utility of our efforts will depend on the reliability of the experimental methods and the coverage of the approaches!

Coverage versus Reliability:



Zur Anzeige wird der QuickTime™
Dekompressor „TIFF (Unkomprimiert)“
benötigt.

A.C. Gavin *et al.*,
Functional organization of the yeast proteome
by systematic analysis of protein complexes.
Nature **415** (2002), pp. 141–147

Perspectives & Demands



- **Methods and Technology drive biology!**
- Applications define the quality
- We move from single readouts to multiplexed signatures
- We move from detecting proteins to describing protein function
- We are currently underway to develop resources
- They should be: complete, specific, permanent, application driven and affordable
- We learn to apply them properly
- We need infrastructures like Protein Binders to advance and apply the potential of binders
- We need to develop standards for quality assurance for binder resources as well as for the preexisting binders available
 - > Deliverable: composite quality seal

