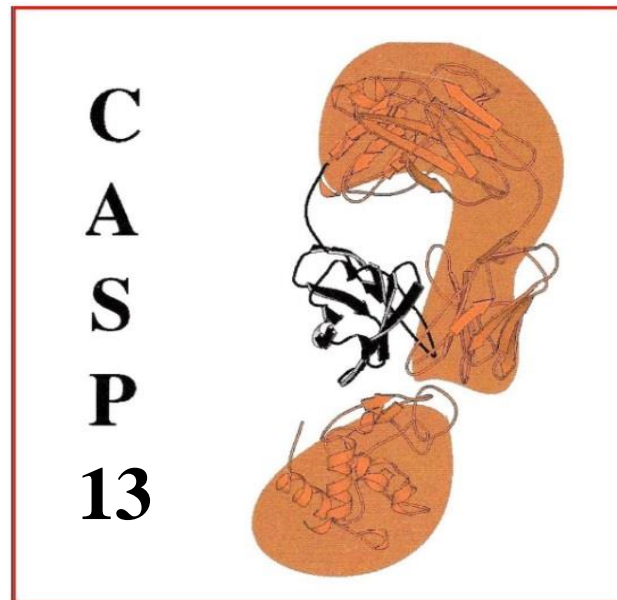


*Protein Structure Prediction Center  
University of California, Davis*

[www.predictioncenter.org](http://www.predictioncenter.org)

Funded by the NIH/NIGMS



Andriy Kryshfovych  
Bohdan Monastyrskyy  
Krzysztof Fidelis

# How would I remember CASP13?

*from operational point of view*

- Hardware failures:

**2 backups are not paranoid**

- Y2K in CASP:

we crossed 1,000 target mark



- Not a single target (!) was canceled due to the premature PDB release
- The new trend for advance online publication (Sneak Peek, BioRxiv) is certainly complicating running CASP
  - 3 targets were lost even before being released
  - 7 targets had to be reclassified /canceled  
(T0950, T0952, H0974, T0955, T0960, T0963, R0958)

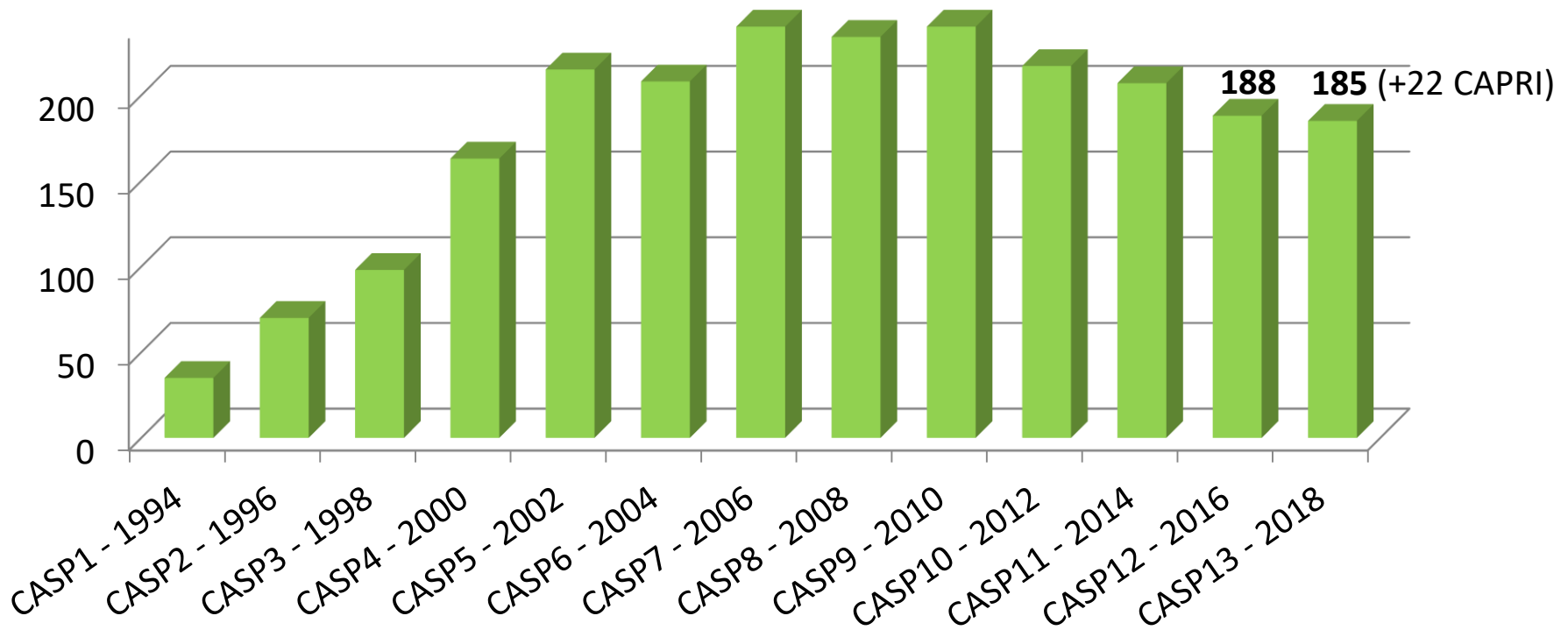
<http://predictioncenter.org/casp13/numbers.cgi>

## CASP13 in numbers

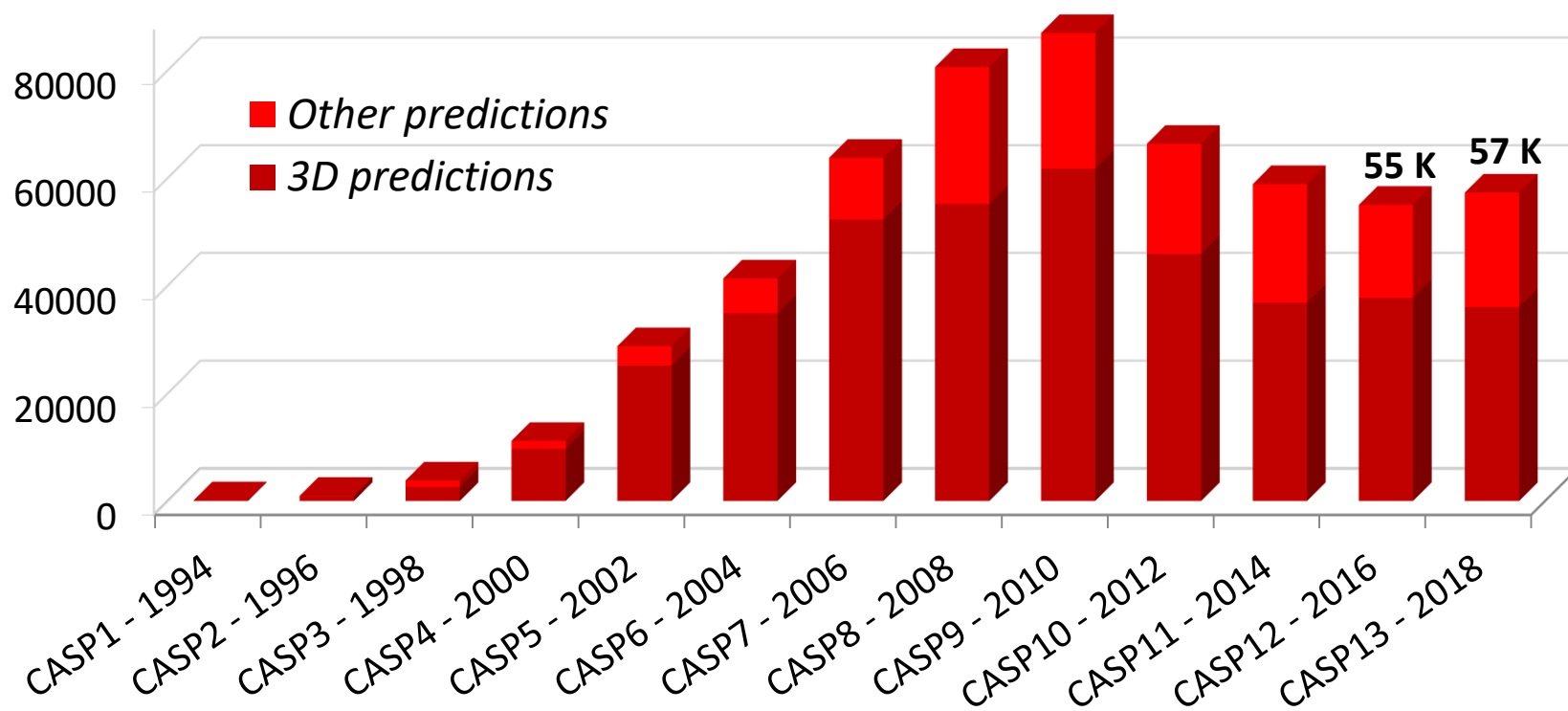
Number of groups registered	<b>207</b>
including: <i>expert groups</i>	120
<i>prediction servers</i>	87
Number of tertiary structure prediction targets released	<b>90</b>
(including <i>all-group targets</i> )	(82)
Number of hetero-multimer targets released	<b>13</b>
Number of refinement targets released	<b>31</b>
Number of assisted prediction targets released	<b>60</b>
Targets canceled (all / human)	<b>(10 / 12)</b>
Targets available/expired for manual non-QA prediction	<b>0 / 72</b>
Targets available/expired for server non-QA prediction	<b>0 / 80</b>
Targets available/expired for QA prediction	<b>0 / 80</b>
Targets available/expired for assisted prediction	<b>0 / 59</b>
Targets available/expired for multimer prediction	<b>0 / 12</b>

Prediction category	Number of groups/servers contributing	Number of models designated as 1	Total number of models
Tertiary structure predictions	107 / 39	7542	35982
Oligomeric predictions	40 / 9	662	2861
Data assisted predictions	24 / 5	456	2017
Residue-residue contacts	46 / 25	3914	3914
Accuracy estimation	52 / 41	4332	8687
Refinement	33 / 6	847	3788
All (unique):	185 / 87	17753	57249

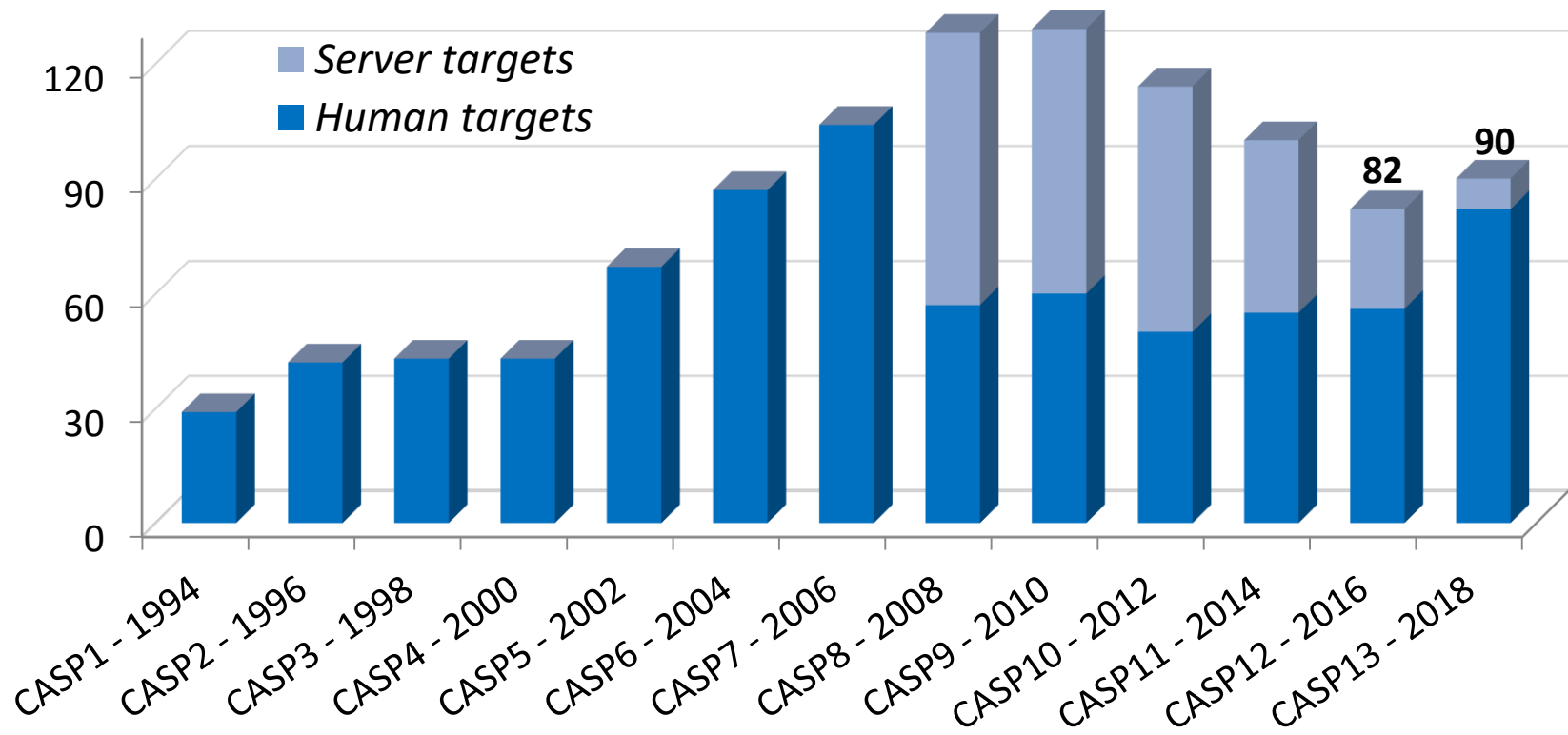
# Groups



# Predictions



# Regular targets



1	Tom Peat	Australia	CSIRO	Xiaochen Bai	USA	UT SouthWest MC
2	Leila Lo Leggio	Denmark	U Kobenhavn	George Minasov	USA	NorthWestern U
3	Ambroise Desfosses	France	IBS, Grenoble	Lindsey Spiegelman	USA	UC San Diego
4	Marianne Ilbert	France	CNRS, Paris	Chi-Lin Tsai	USA	UTMD Anderson
5	Michael Groll	Germany	Tech U Munchen	Manal Swairjo	USA	San Diego State
6	Andrei Lupas, Marcus Hartmann	Germany	Max Planck Tübingen	Andrzej Joachimiak, Karolina Michalska, Kemin Tan	USA	Argonne Lab
7	Noa Keren	Israel	Ben Gurion U	Thomas Szyperski	USA	U Washington
8	Kaspars Tars	Latvia	BRCS, Riga	Gaetano Montelione	USA	U Rutgers
9	Shabir Najmudin	Portugal	U Lisbon	Garry Buchko	USA	Pacific NW Natl Lab
10	Stefan Arold	Saudi Arabia	KAUST	Petr Leiman	USA	U Texas MB
11	Mark van Raaij	Spain	CSIS, Madrid	Damian Ekiert	USA	NY U
12	Tilman Schirmer	Switzerland	U Basel	George Phillips, Jonathan Clinger, Mitchell Miller	USA	U Rice
13	Brian Trevor Sewell	So. Africa	U Cape Town	Hong Zhou	USA	UC Los Angeles
14	Brian Marsden	UK/Canada	SGC, Oxford/Toronto	Hongnan Cao	USA	Georgia I Tech
15	Owen Davies	UK	U Newcastle	Henrique Pereira	USA	L Berkeley Lab
16	Arnaud Basle	UK	U Newcastle	Oliver Clarke	USA	Columbia U
17	Andrew Lovering	UK	U Birmingham	Phoebe Rice	USA	U Chicago
18	Adam Frost	USA	UC San Francisco	Marcus Alahuhta	USA	Natl Renewable Energy Lab

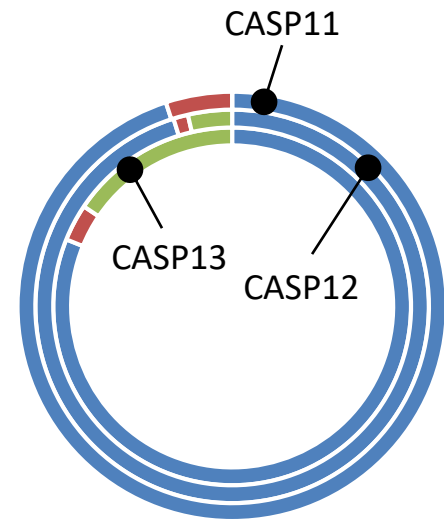
THANKS: 36 structure determination groups from 14 countries

# Targets by quaternary structure and structure determination method

More complexes and more cryo-EM targets

Method	Structures selected as CASP targets				Targets
	ALL	Monomers	Homo-oligomers	Hetero-complexes	
X-ray	<b>64</b> (-6 canceled)	<b>26*</b> (-4)	<b>29*</b> (-2)	<b>10</b>	<b>74</b> (-6)
Cryo EM	<b>8</b> (-1 canceled)	<b>1</b>	<b>4</b>	<b>3</b> (-1)	<b>13</b> (-3)
NMR	<b>3</b> (-1 canceled)	<b>3</b> (-1)	<b>0</b>	<b>0</b>	<b>3</b> (-1)
<b>Total</b>	<b>75</b> (-8 canceled)	<b>30</b> (-5)	<b>32</b> (-2)	<b>13</b> (-1)	<b>90</b> (-10)

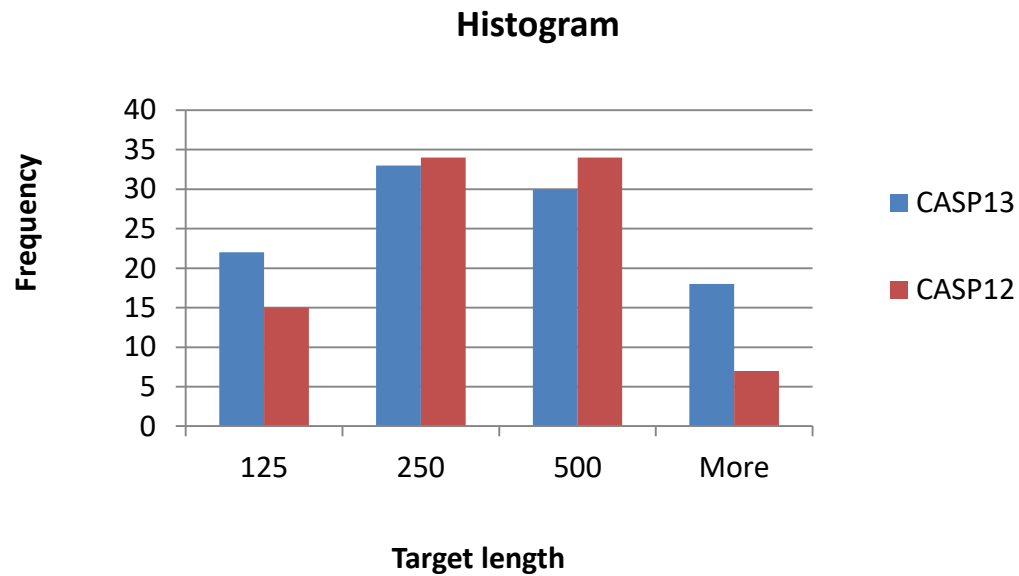
■ X-ray ■ NMR ■ Cryo-EM



\* T0985 was announced as a monomer, but appeared to be a multimer. It was evaluated as both multimer and monomer, but multimeric results were not included in the cumulative score for Assembly groups as only 4 groups sent oligo predictions.

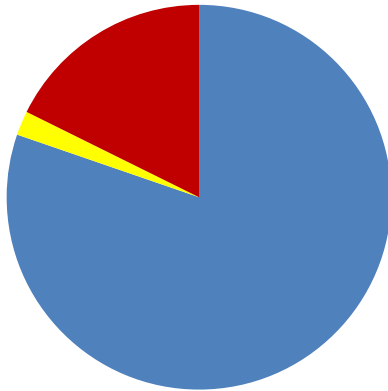


- More complexes and more cryo-EM targets
- More large targets

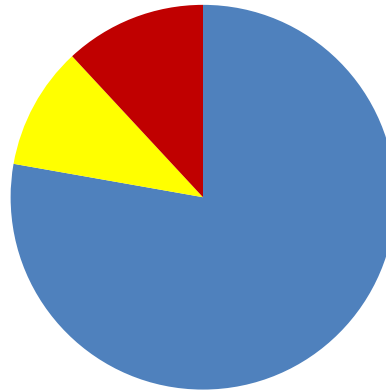


# Domain definition and classification

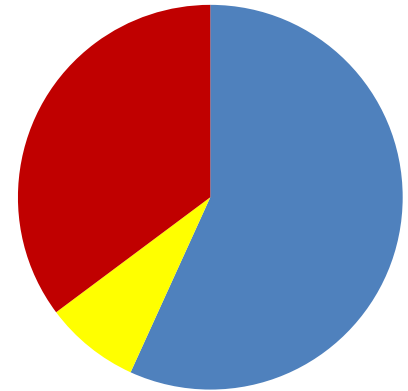
**CASP9**



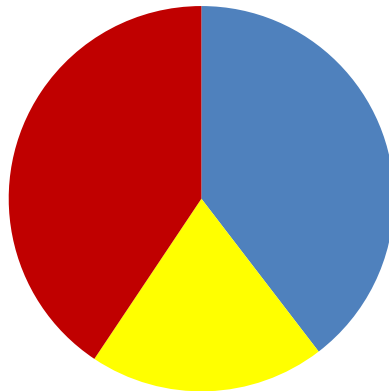
**CASP10**



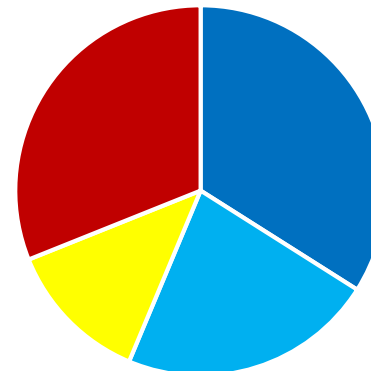
**CASP11**



**CASP12**



**CASP13**



- TBM
- TBM-hard
- FM/TBM
- FM

80 targets split into 111 domains (102 human domains)

6 different types of data-assisted targets (SAXS, X-link\_1, X-link\_2, NMR (real and simulated), SANS, FRET)

Target type	Data sets	Targets	Assessors /Data providers
Refinement		31 (-2) (1 complx)	Randy Read, Tristan Croll (Cambridge)
SAXS assisted	11	19 (4 complx)	Gregory Hura, Susan Tsutakawa (Berkeley)
X-linking assisted	8	14 (3 complx)	Alexander Leitner, Trabjerg Esben (Zurich)
x-linking assisted	4	8 (2 complx)	Juri Rappsilber, Adam Belsom (Berlin, Edinburgh)
NMR assisted	15	15 (-1) (1 cmlpx)	Gaetano Montelione, Antonio Rosato (Rutgers, Firenze)
SANS assisted	1	3 (1 complx)	Anne Martel, Sergei Grudinin (Grenoble)
FRET assisted	1	1	Claus Seidel, Christian Hanke, Mykola Dimura (Dusseldorf)

