

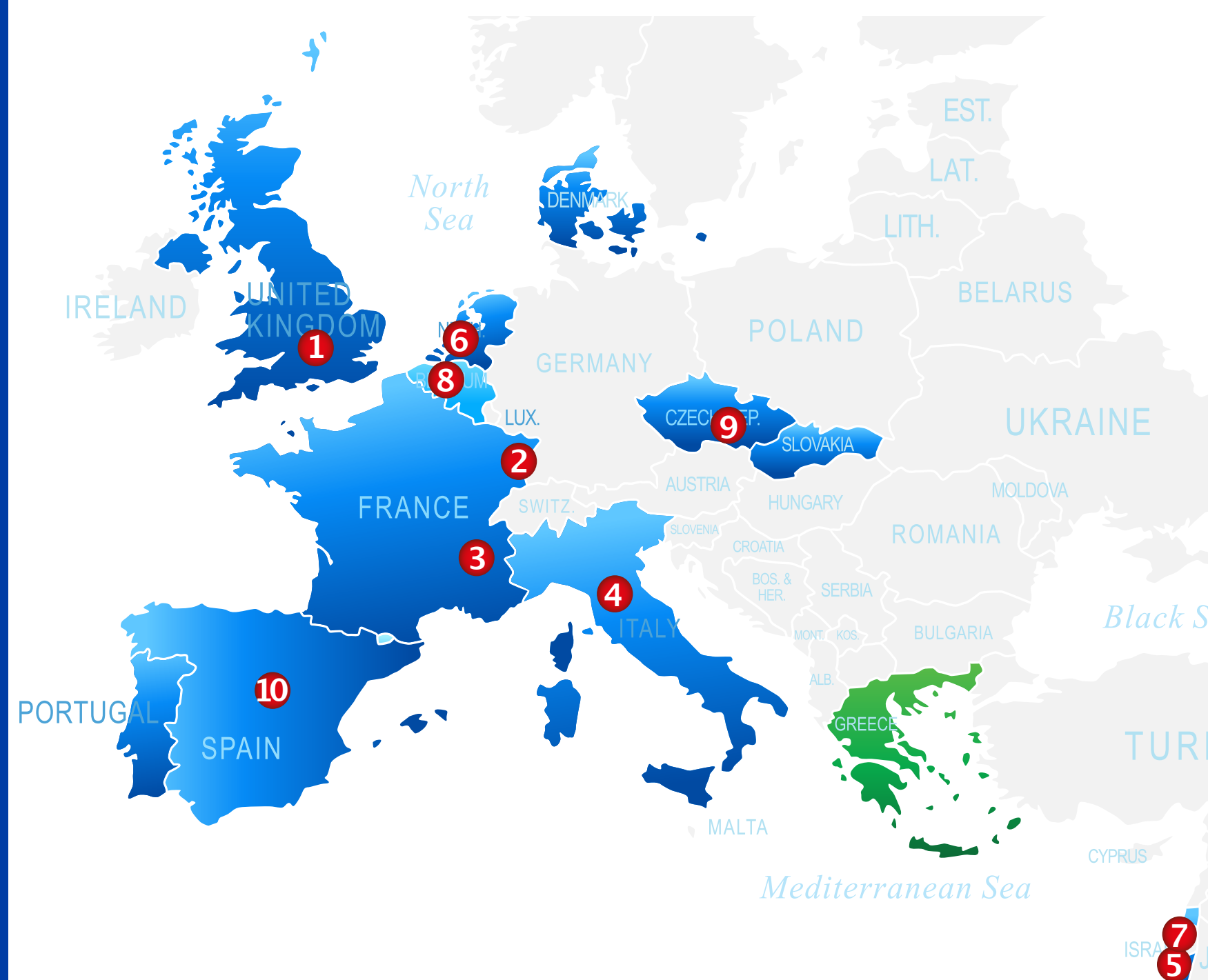
Instruct Access

Did you know you could have free access to a wide range of cutting edge structural biology techniques across Europe?

European governments and leading research institutions have invested in state-of-the-art equipment, which is now available through our online catalogue.

Instruct-ERIC offers funded access to research infrastructure, expert training events, R&D pilot projects and internships to scientists from member countries.

Instruct Members



Instruct member countries shaded blue, observers green.

The **Instruct Centres** and their Principal Investigators:

1. Instruct-UK Dave Stuart	5. WIS Joel Sussman	8. Nanobodies for Instruct Jan Steyaert
2. Instruct-France 1 Alberto Podjarny	6. Instruct-NL Rolf Boelens	9. Instruct-CZ Vladimir Sklenar
3. Instruct-France 2 Darren Hart	7. Centre for Bioinformatics	10. Centre for Image Processing
4. Instruct-Italy Lucia Banci	Gideon Schreiber	Jose-Maria Carazo

Instruct training



Instruct-ERIC provides training in a raft of structural biology technologies.

Training is delivered at Instruct Centres by internationally recognised experts.

- Advanced practical courses in the 'core' techniques of X-ray, NMR and electron microscopy
- Courses in key emerging techniques such as native mass spectrometry and correlative microscopy
- Internships of 3-6 months to an Instruct Centre
- Open to all scientists, not just those who have submitted access proposals.

More information about Instruct training and internships is available on our website.

Instruct Technologies

We offer a comprehensive catalogue of core and cutting edge structural biology techniques, offered across ten Instruct Centres in Europe.

Key technologies:

1. Electron microscopy (EM):

Cryo-EM builds a 3D image from serial projections of sub cellular objects. Electron tomography is particularly powerful for capturing transient structures. Instruct covers all parts of the crystallography pipeline from sample production to crystallization

2. Nuclear magnetic resonance (NMR):

provides 3D structural and dynamic information at atomic resolution. It allows functional process to be followed, even in living cells, and can investigate transient and weak protein-protein interactions.

3. X-ray crystallography:

X-ray crystallography determines the 3D shape of proteins at the atomic level and can define interaction surfaces, conserved structural regions and post-translational modifications.

Complementary technologies:

1. Mass spectrometry:

Determine the stoichiometry, subunit interactions and organization of molecular assemblies.

2. X-ray imaging:

Non-destructive imaging of biological samples at μM range. Particularly good for spatial resolution of structures within a sample.

3. Small angle X-ray scattering (SAXS):

Provides information on particle size, shape and orientation, it is particularly useful for examining molecular complexes.

4. Nanobody Discovery:

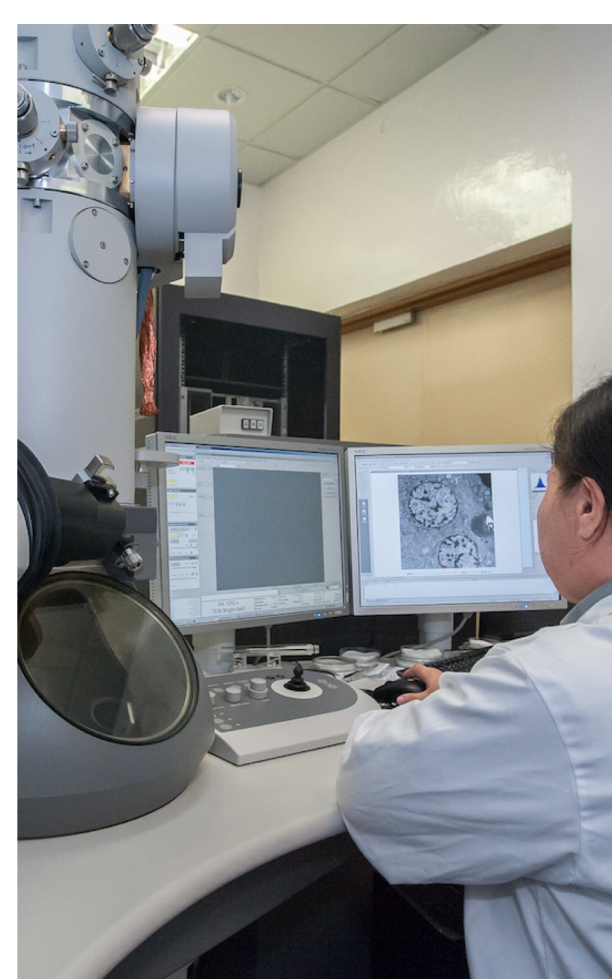
Raised against specific epitopes, nanobodies are used to stabilize transient protein complexes, reveal drug binding sites and aid crystallization for cryo-EM.

Expert Support: Develop your scientific knowledge and skills and further your research project. On an Instruct access visit, you will receive scientific and technical support for your proposal, to ensure that work on site is productive.

Eligibility and Funding: All researchers from member countries can apply to access technology, and funding is available for machine access, travel and accommodation.

Proposal Process: Our streamlined online proposal process guides you step by step as you plan your project, and you will receive prompt peer review and feedback from scientific experts. Visit bookings are made directly with the Centre managers following review.

Working with Industry



- Instruct-ERIC provides cost-effective industry access to cutting edge techniques and expert scientists.
- Our service includes a single point of access, fixed fees, fast turnaround, quality systems and templates for legal agreements.
- 66 companies accessed our infrastructure in the last 3 years including major pharmaceutical and biotech companies.

- We aim to build long-term collaborations and translatable scientific advances.
- We provide specialized training courses open to European companies.

We have well-developed partnerships with manufacturers including Bruker, Agilent, Rigaku, FEI, Qiagen and Leica.

If you or your company are interested in working with us, contact the Instruct Coordinator: coordinator@structuralbiology.eu

Research Highlights

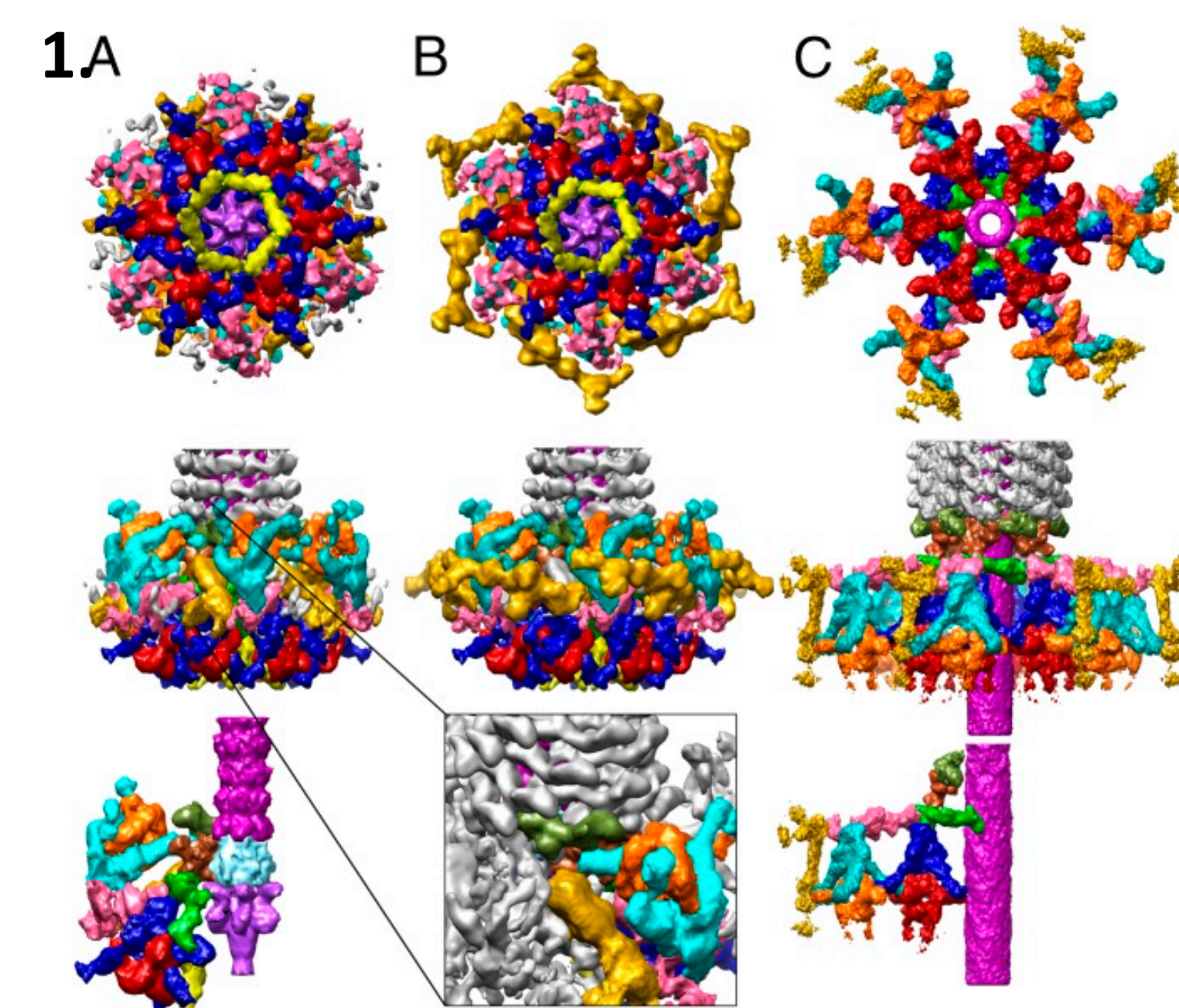


Fig 1. Cryo-EM and tomography at Instruct-CZ centre used to show the conformational changes of the bacteriophage phi812 baseplate induced by binding to the host cell wall. Structures of baseplate in native (A), intermediate (B) and contracted (C) are shown. Maps are contoured at 0.75σ , and colours relate to different baseplate subunits. Nováček, J. *et al.* (2016). *PNAS* **113**:9351-9356.

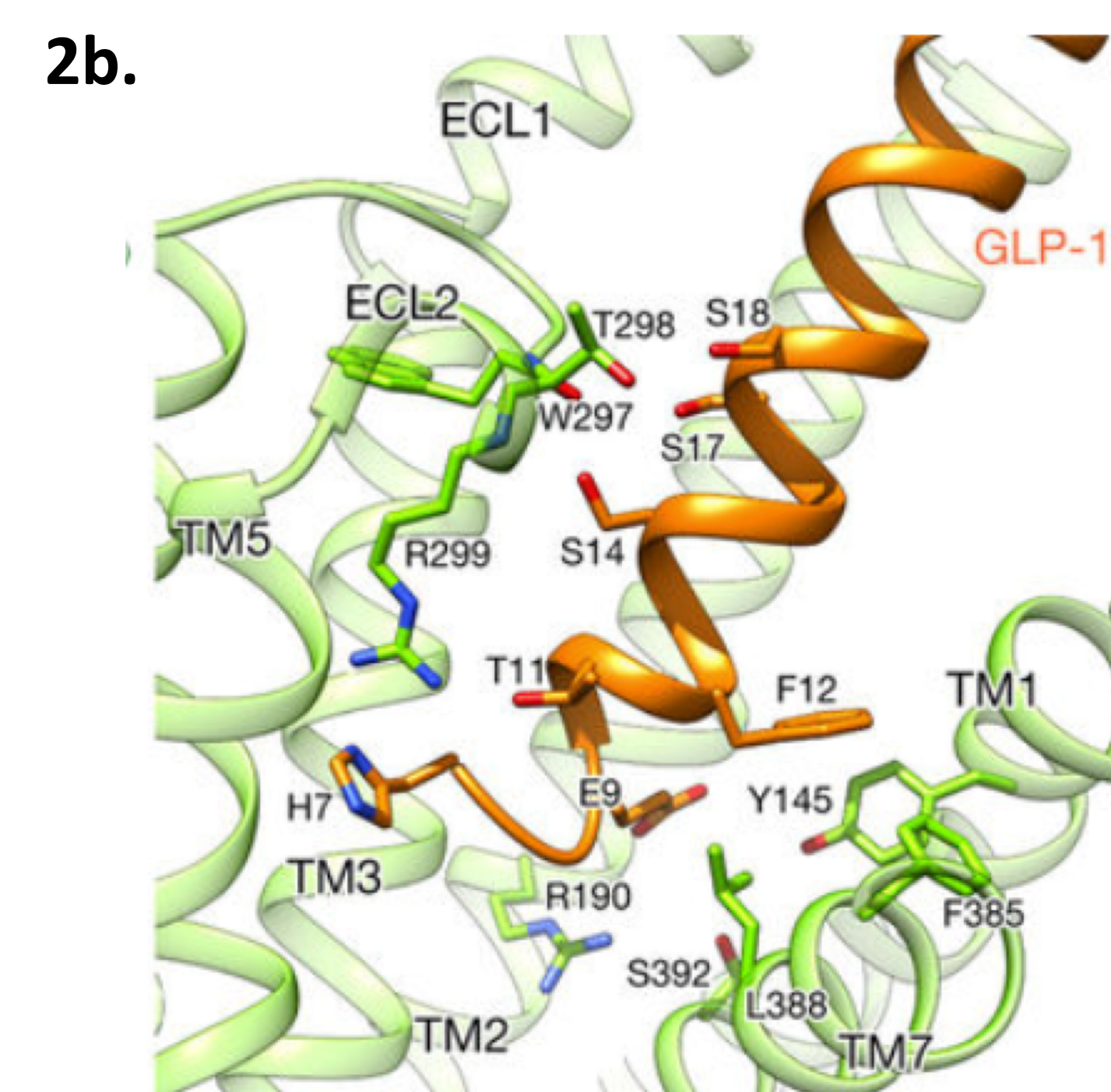
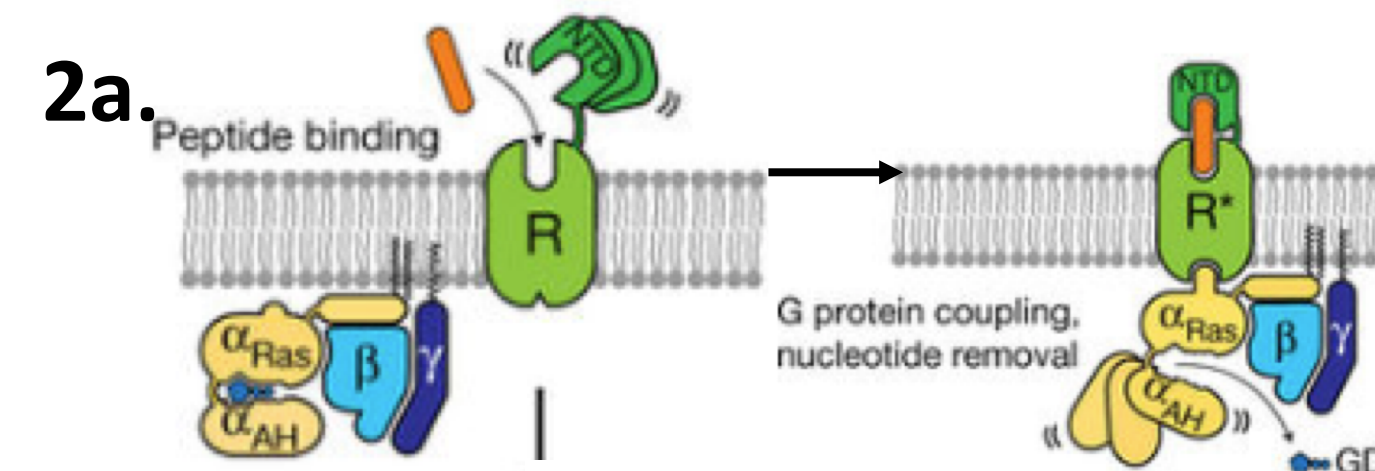


Fig 2. Nanobody technology developed at Nanobodies4Instruct used to stabilise Glucagon-like peptide 1 receptor (GLP-1R) in lipidic state, allowing crystallisation of the peptide-activated complex at near-atomic resolution by cryo-EM. (a) schematic of the activation of a class B GPCR by extracellular peptide agonist via 'two-domain' binding mechanism, (b) Near atomic resolution of crystal structure of GLP-1R, showing peptide-binding pocket (GLP-1 shown in orange). Zhang *et al.* (2017) *Nature* **546**, 248-253

Instruct-ULTRA was launched as a sister project in 2017, to advance Instruct-ERIC as the leading provider of integrated structural biology in Europe.

16 partner countries receive EU 2020 funding to work together on tasks including expanding membership, creating a roadmap for the future, developing new technologies, enabling remote access, standardizing workflows and improving data sharing platforms. The ambitious project runs for three years. www.instruct-ultra.eu