



ACCADEMIA NAZIONALE DEI LINCEI

CONFERENCE

ALLOSTERY TURNS 60

A DISCUSSION MEETING ON THE PAST AND THE FUTURE OF ALLOSTERY

20 MAGGIO 2025

Scientific Organizing Committee: Maurizio BRUNORI (Linceo, Sapienza Università di Roma, coordinatore), Jean-Pierre CHANGEUX (Linceo, Institut Pasteur, Paris), William Allen EATON (Linceo, National Institutes of Health, Bethesda), Giorgio PARISI (Linceo, Sapienza Università di Roma).

PROGRAMME

The Monod–Wyman–Changeux (MWC) model for allosteric proteins is an elegant and powerful theoretical paper published in May 1965 in the *Journal of Molecular Biology* with the title: "On the nature of allosteric transitions: a plausible model". The paper represented a remarkable conceptual evolution in the field of biological regulation introducing a conformational selective mechanism to allow enzymes to cope with the ever-changing physiological demands of the cell. The idea emerged from experiments on the control of L-threonine deaminase activity carried out at the Institut Pasteur à Paris by Jean-Pierre Changeux as a PhD student of Jacques Monod. The MWC model, based on rigorous and elegant thermodynamics, has been inspiring many outstanding scientists round the world, and proved remarkably successful as witnessed by the fact that it is presented in *Biochemistry & Biophysics* textbooks and has been cited more than 10,000 times, possibly a record for a theoretical paper in protein science.

Over and above the celebration of the 60th anniversary of the MWC model publication, this one-day Conference will be devoted to a deep discussion on the future of Allostery. The day will begin with a talk by Jean-Pierre Changeux lui-même, and will continue with presentations dealing with applications of the basic concepts to several natural and synthetic proteins and protein complexes; including hemoglobin that has been considered the paradigmatic allosteric protein; over to membrane receptors and brain pathophysiology; the conformational dynamics by time resolved advanced methodologies; bioenergetic's molecular mechanism and medical relevance of allosteric control.

Martedì 20 maggio

9.00 Welcome addresses

Roberto ANTONELLI (Presidente dell'Accademia Nazionale dei Lincei)

Martin BRIENS (Ambasciatore di Francia in Italia)

Maurizio BRUNORI (Linceo, Sapienza Università di Roma): *Introductory remarks*

Chair: Antoine TRILLER (Ecole Normale Supérieure de Paris)

9.30 Jean-Pierre CHANGEUX (Linceo, Institut Pasteur, Paris): *Allostery: from bacterial regulatory enzymes to brain receptors*

10.10 Kurt WÜTHRICH (Institut f. Molekularbiol.u.Biophysik, ETH, Zurich): *Transmembrane signaling by GPCRs viewed by NMR*

10.50 Coffee break

Chair: Sir Alan FERSHT (Linceo, University of Cambridge)

11.10 William Allen EATON (Linceo, National Institutes of Health, Bethesda): *Hemoglobin, the paradigm of multisubunit allosteric proteins*

11.50 Maurizio BRUNORI (Linceo, Sapienza Università di Roma): *Variations on the theme*

12.20 Amnon HOROVITZ (Weizmann Institute of Science, Rehovot): *The GroEL nano-machine: allostery and function*

13.00 Break

Chair: Peter BRZEZINSKI (University of Stockholm)

- 14.20 Zoe COURNIA (Academy of Athens): *Allostery and drug discovery*
15.00 Sir John WALKER (University of Cambridge): *Allosteric regulation of ATP synthase*
15.40 Jean Marie LEHN (Linco, University of Strasbourg Institute for Advanced Study USIAS): *The management of oxygen: the ITPP Story - From the Laboratory to the bedside*
16.20 Coffee break

Chair: Giorgio PARISI (Linco, Sapienza Università di Roma)

- 16.40 Dame Carol ROBINSON (Kavli Institute, Oxford): *From recombinant complexes to regions of the brain: what role does Allostery play?*
17.20 Peter WOLYNES (University of Houston): *Frustration and allostery*
18.00 Jean-Pierre CHANGEUX (Linco, Institut Pasteur, Paris): *The future...*
18.20 *Concluding remarks by Giorgio Parisi*

ROMA – PALAZZO CORSINI- VIA DELLA LUNGARA, 10
Segreteria del convegno: convegni@lincoi.it – <http://www.lincoi.it>

Tutte le informazioni per partecipare al convegno sono disponibili su:
All information for attending the conference is available at:
<https://www.lincoi.it/it/manifestazioni/allostery-turns-60>

Per partecipare al convegno è necessaria l'iscrizione online
Fino alle ore 10 è possibile l'accesso anche da Lungotevere della Farnesina, 10
I lavori potranno essere seguiti dal pubblico anche in streaming
Online registration is required to attend the conference.
Until 10 a.m. access is also possible from Lungotevere della Farnesina 10.
The conference can also be followed by streaming.

L'attestato di partecipazione al convegno viene rilasciato esclusivamente a seguito di partecipazione in presenza fisica e deve essere richiesto al personale preposto in anticamera nello stesso giorno di svolgimento del convegno
The certificate of participation in the conference will be issued only following on attendance in presence and must be requested to the staff in charge on the same day of the conference.