Timetable for 16th European Nitrogen Fixation Conference (ENFC16), Oxford 26th-29th August 2025

DAY 1 (Tues 26th Aug 2025)

Registration from 13.00

16.00-16.15 **Welcome from the 16th ENFC Organising Committee**

16.15-17.00 **Presentation of the Adam Kondorosi Prize Young Researcher**

17.00-18.00 **Opening Lecture: Jonathan Zehr, Nitroplast**

18:00-18:05 **Lindsay Flook**

18:05-18:10 **Sandra Bensmihen**

18.10-19.30 **Welcome drinks reception**

From 19.30 **You are free to explore Oxford and choose your own restaurant for dinner**

DAY 2 (Wed 27th Aug 2025)

Plenary Sessions 1 & 2: L1

9.00-10.35 **Biochemistry and Bioengineering (Plenary 1)**
Chair: Ray Dixon (UK)

9.00-9.05 **Ray Dixon (UK)**
9.05-9.35 **Luis Rubio (ES)** *Engineering of nitrogenase cofactor biosynthesis in yeast mitochondria* (PL1)
9.35-10.05 **Oliver Einsle (DE)** *Conformational protection of molybdenum nitrogenase* (PL2)
10.05-10.35 **Yi-Ping Wang (CN)** *Nitrogenase variants with enhanced nitrogen fixation and decreased non-productive hydrogen evolution activities* (PL3)

10.35-11.05 Coffee

11.05-12.40 Symbiotic Signalling and Infection (Plenary 2)
Chair: Jens Stougaard (DK)

11.05-11.10 **Jens Stougaard (DK)**
11.10-11.40 **Kasper Andersen (DK)** *Connecting the symbiotic signaling pathway* (PL4)
11.40-12.10 **Natasha Horta Araújo (FR)** *Molecular mechanismsinvolved in the establishment of a rhizobial symbiosis without Nod factor or infection threads in the tropical legume Aeschynomene evenia* (PL5)
12.10-12.40 **Katharina Schiessl (UK)** *Getting to the root of symbiotic root nodule development* (PL6)

12.40-14.00 Lunch

Parallel Session A1: L1

14.00-15.30 Biochemistry and Bioengineering (Parallel A1)
Chairs: Barney Geddes (US) & Anke Becker (DE)

14.00-14.20 **Barney Geddes (US)** *Defining minimal symbiotic elements to facilitate novel symbiosis gene discovery and engineering of new-to-nature symbioses* (O1)
14.20-14.40 **Anke Becker (DE)** *AlphaBacTools: a bioengineering kit for alpha-rhizobia and other Alphaproteobacteria* (O2)
14.40-14.50 **Lucia Paya-Tormo (ES)** *Femo-cofactor synthesis by a thermophilic nitrogenase lacking the nifen scaffold* (O3)
14.50-15.00 **Nicholas Smith (CA)** *Uncovering the ancestral state of the NodZ enzyme* (O4)
15.00-15.10 **Tim Haskett (US)** *Engineering Two-Stage Systems for Biological Nitrogen Fertilizer* (O5)
15.10-15.20 **Janneke Balk (UK)** *The function of BRUTUS in iron homeostasis and nodulation* (O6)
15.20-15.30 **Shoba Laxmi (UK)** *Watching the P cluster breathe: Electrochemical control and spectroscopy of nitrogenase crystals* (O7)

Parallel Session A2: L2

14.00-15.30 Symbiotic Signalling and Infection (Parallel A2)
Chairs: Simona Radutoiu (DK) & Manuel Frank (DK)

14.00-14.15 **Simona Radutoiu (DK)** *Engineering of Lysin motif receptor-like kinases to enable Nod factor perception in cereals* (O8)
14.15-14.30 **Manuel Frank (DK)** *A transcriptional module primes plant root hairs for rhizobium infection* (O9)
14.30-14.40 **Jessie Dolliver (UK)** *Symbiotic Rhizobium leguminosarum attachment to roots* (O10)
14.40-14.50 **Fang Xie (CN)** *The RALF-FER-HA Signaling Module Mediates NF-Induced Root Hair Deformation and Rhizobial Infection* (O11)
14.50-15.00 **Fernanda de Carvalho-Niebel (FR)** *Polarity and cell wall remodelling in transcellular infection of Medicago root hairs* (O12)
15.00-15.10 **Martin Parniske (DE)** *The inner workings of the CCaMK/Cyclops complex* (O13)
15.10-15.20 **Colin Pellerin-Lefebvre (FR)** *The polyol-monosaccharide transporter AePMT is essential for lateral root base intercellular infection in the tropical legume Aeschynomene evenia* (O14)

15.20-15.30 **Pengbo Liang (CN)** *Membrane nanodomain-localized formin condensation gates symbiotic microbial entry in legume and solanaceous plants* (O15)

15.30-16.00 Tea

Parallel Session B1: L1

16.00-17.30 **Regulation of Nitrogen Fixation (Parallel B1)**
Chairs: Eva Kondorosi (HU) & Katharina Markmann (DE)

16.00-16.20 **Eva Kondorosi (HU)** *Co-evolved peptides driving nitrogen-fixing symbiosis: Insights into NCR and nodGRP functions in Medicago truncatula* (O16)
16.20-16.40 **Katharina Markmann (DE)** *Systemic control of root architecture adaptation to biotic and abiotic stimuli through mobile miRNAs* (O17)
16.40-16.50 **Matthias Benoit (FR)** *The symbiotic long non-coding RNA SYNC1 regulates RSD expression and nodule development* (O18)
16.50-17.00 **Sara Dendene (FR)** *FcrX, a new global regulator of cell cycle in free living conditions and during symbiosis in Sinorhizobium meliloti* (O19)
17.00-17.10 **Jian Feng (CN)** *Understanding the function and evolution of NIN and NIN-like* proteins (O20)
17.10-17.20 **Marcelo Bueno Batista (US)** *Structural insights into the NifL-NifA regulatory system for engineered control of nitrogen fixation in Proteobacteria* (O21)
17.20-17.30 **Xu Chen (CN)** *Multiple Auxin Gradients: Determining Soybean Nodule Size and Nitrogen Fixation Capacity through Cell Differentiation and Meristem Regulation* (O22)

Parallel Session B2: L2

16.00-17.30 **Interaction of N_2 fixation and Environmental Factors (Parallel B2)**
Chairs: Martina Ried (DE) & Sofie Goormachtig (BE)

16.00-16.20 **Martina Ried (DE)** *Inositol pyrophosphates – Master regulators of plant root endosymbiosis?* (O23)
16.20-16.40 **Sofie Goormachtig (BE)** *Fast track to environmentally adapted rhizobia for growing soybean at northern latitudes using citizen science* (O24)
16.40-16.50 **Jeffrey Chen (AU)** *Interaction between nitrogen-fixing symbiosis and nematode parasitism in Medicago truncatula* (O25)
16.50-17.00 **Jiacan Sun (AU)** *Do Beneficial Root Symbioses Impact Root Hydraulic Conductance?* (O26)
17.00-17.10 **Helena Van den Eynde (BE)** *Delving into Symbiotic and Non-Symbiotic Bradyrhizobium–Soybean Interactions in Northwest Europe* (O27)
17.10-17.20 **Fede Berckx (SE)** *Nitrogen uptake, BNF, and yield in three legumes in response to weed competition* (O28)
17.20-17.30 **Manuel Becana (ES)** *Physiological, biochemical, and molecular characterization of hemoglobins from Lotus japonicus* (O29)

17.30-19.00 **Poster Session 1 (odd numbers)**

DAY 3 (Thurs 28th Aug 2025)

Plenary Sessions 3 & 4: L1

9.00-10.35 **Bacterial Physiology and Genetics of Nitrogen Fixation (Plenary 3)**
Chair: Raphael Ledermann (UK)

9.00-9.05 **Raphael Ledermann (UK)**
9.05-9.35 **Emanuele Biondi (FR)** *Bacteroid differentiation and bacterial cell cycle are linked* (PL7)
9.35-10.05 **Jose Jimenez-Zurdo (ES)** *Riboregulation in α-rhizobia* (PL8)
10.05-10.35 **Carmen Sanchez-Canizares (UK)** *Nitrogen sensing via PTS^{Ntr}-RelA crosstalk modulates ppGpp, sRNAs, and amino acid transport in Rhizobium leguminosarum* (PL9)

10.35-11.05 Coffee

11.05-12.45 **Nodule Function in Plants (Plenary 4)**
Chair: Myriam Charpentier (UK)

11.05-11.30 **Florian Frugier (FR)** *Local and systemic regulation of nodulation in Medicago truncatula* (PL10)
11.30-11.55 **Thomas Ott (DE)** *Molecular regulation of rhizobial infection* (PL11)
11.55-12.20 **Jeremy Murray (CN)** *Sending the Right Signals: The Molecular Basis of Flavonoid Specificity in the Legume-Rhizobia Symbiosis* (PL12)
12.20-12.45 **Xuelu Wang (CN)** *Energy sensing, carbon allocation, and symbiotic nitrogen fixation in soybean* (PL13)

12.45-14.00 Lunch

Parallel Session C1: L1

14.00-15.30 **Non legume Symbiotic and Associative Nitrogen Fixation (Parallel C1)**
Chairs: Katharina Pawlowski (SE) & Barbara Reinhold-Hurek (DE)

14.00-14.20 **Katharina Pawlowski (SE)** *Frankia and actinorhizal plants: another approach to root nodule symbiosis* (O30)
14.20-14.40 **Barbara Reinhold-Hurek (DE)** *A novel Xre-family repressor for Type 6 protein secretion system genes links nitrogen signaling with beneficial plant-microbe interactions* (O31)
14.40-14.50 **Hailey-Hannah Cottet (DE)** *Endophytic N_2-fixing Vibrio sp. co-occur with recently discovered seagrass symbiont* (O32)
14.50-15.00 **Anna Martyn (DE)** *Symbiosis signalling in barley and its functions beyond arbuscular mycorrhizal symbiosis* (O33)
15.00-15.10 **Yongliang Yan (CN)** *Construction of ammonium-secreting engineered bacteria through artificial non-coding regulatory RNAs targeting AmtB and GlnA mRNAs* (O34)
15.10-15.20 **Rafael Venado (US)** *Single-cell omics reveal gene networks behind mucilage production in nitrogen-fixing maize and sorghum roots* (O35)
15.20-15.30 **Thiago Alexandre Moraes (UK)** *From Legumes to Cereals: Engineering Nitrogen Fixation in cereals* (O36)

Parallel Session C2: L2

14.00-15.30 **Nodule Function (Parallel C2)**
Chair: René Geurts (NL)

14.00-14.20 **Jieyu Liu (NL)** *Evolution of a NIN-LIKE PROTEIN into a Master Regulator of Nitrogen-Fixing Nodulation* (O37)
14.20-14.40 **Tonni Grube Andersen (DE)** *The importance of barriers in a functional relationship* (O38)

14.40-14.50 **Jieshun Lin (SG)** *A novel secondary messenger-Zn mediates control of nitrogen fixation via transcription factor filamentation* (O39)

14.50-15.00 **Andreas Niebel (FR)** *NFYA1 and long non-coding RNAs in the regulation of nodule development* (O40)

15.00-15.10 **Chao Su (CN)** *Symbiosome functionality in Medicago truncatula nodules requires continuous clearing of pectins from the symbiosome space* (O41)

15.10-15.20 **Min-Yao Jhu (UK)** *Spatiotemporal Transcriptomic Mapping of Nodule Organogenesis in Medicago Reveals Cortex-Derived Cell Types Developed to Accommodate Nitrogen-Fixing Rhizobia* (O42)

15.20-15.30 **Senjuti Sinharoy (IN)** *RSD-mediated suppression of NIN and NLP2 transcription is crucial for symbiotic nitrogen fixation* (O43)

15.30-16.00 ***Tea***

Parallel Session D1: L1

16.00-17.30 **Physiology and Genetics of Nitrogen Fixation in Plants or Bacteria (Parallel D1)**
Chairs: Peter Mergaert (FR) & Alicia Camuel (FR)

16.00-16.20 **Peter Mergaert (FR)** *Genome topology of terminally differentiated Sinorhizobium meliloti bacteroids in Medicago nodules* (O44)

16.20-16.40 **Alicia Camuel (FR)** *Rhizobial type iii effectors orchestrate nodule formation by bypassing canonical symbiotic determinants and hijacking the sumoylation pathway* (O45)

16.40-16.50 **Didier Reinardt (CH)** *Metabolomic, proteomic, and genomic patterns reveal sanctioning mechanisms of Medicago truncatula against non-cooperative rhizobia* (O46)

16.50-17.00 **Hayley Knights (UK)** *Mechanisms Behind Nodule Infection and Bacteroid Dedifferentiation in Rhizobium leguminosarum* (O47)

17.00-17.10 **Garrett Levin (US)** *Polyhydroxyalkanoate Production by Sinorhizobium meliloti HM006 Bacteroids is Responsible for Poor Symbiotic Performance with Alfalfa* (O48)

17.10-17.20 **Ann-Kathrin Maurer (UK)** Carbon catabolite repression prioritizes dicarboxylates by specifically repressing transport of alternative carbon sources (O49)

17.20-17.30 **Swati Mahiwal (DE)** *Endodermal suberization, passage cell occurrence and its association with nodulation in Lotus japonicus* (O50)

Parallel Session D2: L2

16.00-17.30 **Diversity and Evolution (Parallel D2)**
Chairs: Pierre-Marc Delaux (FR) & Ryan Folk (US)

16.00-16.20 **Pierre-Marc Delaux (FR)** *Stepwise evolution of the nitrogen-fixing root nodule symbiosis* (O51)

16.20-16.40 **Ryan Folk (US)** *Shifts in evolutionary lability underlie independent gains and losses of root-nodule symbiosis in a single clade of plants* (O52)

16.40-16.50 **Tatiana Vernié (FR)** *Identification of gene regulatory networks required for nitrogen fixing symbiosis* (O53)

16.50-17.00 **Thomas Underwood (UK)** *Crime & Punishment: The regulation of the legume-Rhizobium symbiosis* (O54)

17.00-17.10 **Tora Fougner-Okland (DE)** *Evolutionary trajectories and functional diversification of the SymRK-like receptor family* (O55)

17.10-17.20 **Rebecca Doyle (CA)** *Negative frequency-dependent selection maintains partner quality variation in a keystone nutritional mutualism* (O56)
17.20-17.30 **Wouter Kohlen (NL)** *Genomic and Functional Insights into NIN-Cytokinin Interactions During Nodulation in Chamaecrista mimosoides* (O57)

17.30-19.00 **Poster Session 2 (even numbers)**

DAY 4 (Friday 29th Aug 2025)

Plenary Sessions 5 & 6: L1

9.00-10.35 **Non-legume Symbiotic and Associative Nitrogen Fixation (Plenary 5)**
Chair: Barbara Reinhold-Hurek (DE)

9.00-9.05 **Barbara Reinhold-Hurek (DE)**
9.05-9.35 **Cristina Sarasa-Buisan (ES)** *Conjugation-mediated DNA transfer to the obligate symbiont Nostoc azollae: A gateway to synthetic biology in symbiotic cyanobacteria* (PL14)
9.35-10.05 **Adriana Hemerly (BR)** *Modulation of Genetic Controls to Improve Root Association with Plant Growth Promoting Bacteria* (PL15)
10.05-10.35 **Wiebke Mohr (DE)** *Symbiosis between a heterotrophic N_2-fixer and a marine diatom of global importance* (PL16)

10.35-11.05 Coffee

11.05-12.40 **New Developments in Enhancing Symbiotic Performance (Plenary 6)**
Chair: Ellie Harrison (UK)

11.05-11.10 **Ellie Harrison (UK)**
11.10-11.40 **Michael Udvardi (AU)** *Genetic and genomic approaches to increase symbiotic nitrogen fixation in legumes* (PL17)
11.40-12.10 **Ertao Wang (CN)** *Networks of the symbiosis and immunity continuum in plants* (PL18)
12.10-12.40 **Dugald Reid (AU)** *Altering nitrate induced nodule senescence via the FUN transcription factor* (PL19)

12.40-13.50 Lunch

Parallel Session E1: L1

13.50-15.20 **Agronomic Impact of Biological Nitrogen Fixation (Parallel E1)**
Chair: Jason Terpolilli (AU)

13.50-14.10 **Jason Terpolilli (AU)** *Evolution and effectiveness of symbiotic N_2 fixation in rhizobia as inoculants in Australia* (O58)
14.10-14.30 **David Herridge (AU)** *Making sense of N_2 fixation by grain legumes: individual fields to national/regional/global scales* (O59)
14.30-14.40 **Els Heyrman (BE)** *Nitrogen fixation of four annual legume species in mixed intercropping versus pure stand in a maritime climate* (O60)
14.40-14.50 **Juile Ardley (AU)** *Microbial N_2 fixation in cereals and other non-legumes: a call for standards of evidence in support of claims* (O61)

14.50-15.00 **Maarten Ryder (AU)** *Challenges to improving N fixation in grain legumes on farm in southern Australia* (O62)
15.00-15.10 **Anna Motnenko (CA)** *Toward Developing an Inoculant for Dry Bean in Canada* (O63)
15.10-15.20 **Nisha Tak (IN)** *Genomic insights to Indian Sinorhizobium aridi strains confirming their broad host range and symbiotic efficacy to nodulate important legume cash crops* (O64)

Parallel Session E2: L2

13.50-15.20 **Modelling and Systems Biology (Parallel E2)**
Chairs: George DiCenzo (CA) & Turlough Finan (CA)

13.50-14.10 **George DiCenzo (CA)** *Modelling the metabolism of rhizobia and symbiotic nitrogen fixation* (O65)
14.10-14.30 **Turlough Finan (CA)** *Sinorhizobium meliloti – the minimal symbiotic genome and hna phage resistance locus* (O66)
14.30-14.40 **Joel Klein (UK)** *Retention of Nodulation Genes in Adenanthera and Parkia Indicates Diverging Symbiotic Fates in the tribe Mimoseae (Caesalpinioideae)* (O67)
14.40-14.50 **Olivia Tjahjono (UK)** *Regulation of Central Carbon Metabolism and Carbon Storage by the PTS^{Ntr} in Rhizobium leguminosarum* (O68)
14.50-15.00 **Yanru Lin (CN)** *Decoding the lncRNA-Mediated Networks in Soybean Nodulation: From Transcriptomic Dynamics to Sustainable Nitrogen Fixation Strategies* (O69)
15.00-15.10 **Karen Velandia (AU)** *Right place, right time: Tissue-specific roles of gibberellin in coordinating rhizobial infection and nodule organogenesis* (O70)
15.10-15.20 **Zhe Yan (CN)** *Single-Cell Transcriptomics in Soybean Unveils Genes Regulating Nodule Development* (O71)

15.20-15.45 Tea

15.45-16.30 Presentation of the Adam Kondorosi Prize Senior Researcher

16.30-17.00 Closing Lecture, Philip Poole

17.00-17.30 Closing Ceremony

18.30-19.00 Conference Dinner Drinks, Natural History Museum

19.15-21.15 Conference Dinner with the Dinosaurs, Natural History Museum

21.15-22.45 Live Band and Dancing