



PROGRAMME

EMBO
Workshop

Cell death:

Friend or foe in animal and plant immunity

11 – 15 October 2024 | Sant Feliu de Guíxols, Spain

THE
EMBO
JOURNAL

 EMBOpress

DFG
Deutsche
Forschungsgemeinschaft

SFB 1403
CELL DEATH

IN IMMUNITY, INFLAMMATION AND DISEASE



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CENTRE FOR RESEARCH
IN AGRICULTURAL GENOMICS

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About the Workshop

Host organisms utilise a range of genetically encoded cell death programmes in response to pathogens to mount an effective immune response. For their successful colonisations, pathogens evolved a plethora of virulence strategies to subvert host cell death which enable them to overcome the host immune response and to invade host tissues. The structural and lifestyle differences between animals and plants have been considered to shape very different host defence mechanisms. However, an emerging body of evidence indicates that several components of the host-pathogen interaction, in particular, the regulation of immunogenic cell death are shared between the two major branches of eukaryotic life.

This EMBO Workshop will provide an evolutionary and comparative overview of immunogenic cell death in both plants and animals and will explore the (patho) physiological roles of cell death during infection as a “Friend or Foe” of the host immunity. The goal of this third edition of the workshop is to bring together world experts on plant and animal cell death to discuss the most recent advances in the field, with a focus on the conserved and divergent cell death mechanisms and their impact on immunity in health and disease. Such a refreshing and multidisciplinary approach will provide unique opportunities for interactions and the exchange of ideas leading to further synergism between both fields.

About EMBO Courses and Workshops

EMBO Courses and Workshops are selected for their excellent scientific quality and timelines, provision of good networking activities for all participants and speaker gender diversity (at least 40% of speakers must be from the underrepresented gender).

Organisers are encouraged to implement measures to make the meeting environmentally more sustainable.

Organizers

Núria Sánchez Coll
*Centre for Research in Agricultural
Genomics, Spain*

Hamid Kashkar
*Institute for Molecular Immunology,
University of Cologne, Germany*

SPEAKERS

- **Alga Zuccaro**, University of Cologne, Germany
- **Ana García-Saez**, University of Cologne, Germany
- **Christina Ising**, University of Cologne, Germany
- **Domagoj Vucic**, Genentech Inc, South San Francisco, USA
- **Elisabeth Hartland**, Hudson Institute of Medical Research, Australia
- **Eunyoung Chae**, National University of Singapore
- **Farid el Kasmi**, ZMBP, Tübingen, Germany
- **Florian Schmidt**, University of Bonn, Germany
- **Georg Häcker**, University of Freiburg, Germany
- **Hao Wu**, Boston Children's Hospital, USA
- **Henning Walczak**, Institute of Biochemistry, University of Cologne, Germany
- **Hirotsugu Oda**, University of Cologne, Germany
- **J. Marie Hardwick**, Johns Hopkins, Baltimore, USA
- **James Vince**, Walter and Eliza Hall Institute, Australia
- **Jane Parker**, MPIPZ, Cologne, Germany
- **Jijie Chai**, Westlake University, China
- **Johana Misas-Villamil**, University of Cologne, Germany
- **John Silke**, Walter and Eliza Hall Institute, Australia
- **Kerstin Brinkmann**, WEHI, Melbourne, Australia
- **Kim Newton**, Genentech Inc, South San Francisco, USA
- **Libo Shan**, University of Michigan, USA
- **Manolis Pasparakis**, University of Cologne, Germany
- **Marion MacFarlane**, MRC Toxicology Unit, University of Cambridge, UK
- **Mo Lamkanfi**, VIB Ghent, Ghent, Belgium
- **Pascal Meier**, The Institute for Cancer Research, London, UK
- **Petr Broz**, University of Lausanne, Switzerland
- **Renier van der Hoorn**, University of Oxford, UK
- **Russell E. Vance**, University of California, Berkeley, USA
- **Simon Stael**, Swedish Agricultural University, Uppsala, Sweden
- **Tolga Bozkurt**, Imperial College, London, UK
- **Tonni Grube Andersen**, MPIPZ, Cologne, Germany
- **Vishva Dixit**, Genentech Inc, South San Francisco, USA

PROGRAMME

Day 1 | 11 October 2024

YOUNG SCIENTIST'S WORKSHOP "COMING STARS IN CELL DEATH RESEARCH"

Organized by:

*Besarta Thaqi, Hossein Hozhabri, Laura Schwarz, Sarah Hövel,
and Tanja Schwab from the University of Cologne
Elena Moreno Castillo, Joel Ayet, Marta Salas Gómez, and Nerea Ruiz
from the Centre for Research in Agricultural Genomics*

16:00-16:30 *Introduction of speakers*

Heather Bisbee, Scientific Editor at Elsevier

Daniela Sueldo, Associate Professor at Norwegian University of Science and Technology

Stephen Tahir, POncology researcher at Abbvie Inc

Ulrich Kessler, CEO at Dimericon Therapeutics AG

Ludovico Cantuti Castelvetri, Associate Director at Zomagen Biosciences

16:30-17:30 *Panel discussion. Open questions by attendants to invited speakers about their current role and their challenges*

WORKSHOP WELCOME

17:50 *Welcome by Núria Sánchez Coll and Hamid Kashkar*

SESSION 1: OPENING

Chair: Núria Sánchez Coll and Hamid Kashkar

18:00-18:30 *TIR-NLR immunity signalling and execution in plants*

Jane Parker

18:30-18:45 *Impact of temperature elevation on cell death signaling induced by Toll/interleukin-1 receptor (TIR) from plant intracellular immune receptors*

Maud Bernoux

18:45-19:00 *TeTIR-containing ATPases are mammalian analogs of plant TNL and TNP receptors and kill cells by their NADase activity.*

Kay Hofmann

19:00-19:15 *Unraveling the roles of Cytomegaloviruses proteins in inflammasome regulation and pyroptosis inhibition*

Ana Pinto

19:15-19:30 *Apoptosis in mesenchymal stromal cells activates an immunosuppressive secretome predicting clinical response in Crohn's disease*

Tik Shing Cheung

19:30-20:00 *Why so many ways to Die?*

Vishva Dixit

20:00-21:30 *Dinner & get-together*

PROGRAMME

Day 2 | 12 October 2024

SESSION 2: CELL DEATH PROTEASES, PROTEASE INHIBITORS AND THEIR SUBSTRATES

Chair: Hiro Oda and Moritz Nowack

09:00-09:25 *cFLIP limits cell death & proinflammatory gene expression during mouse development*
Kim Newton

09:25-09:50 *Regulation of necroptosis and its role in inflammation*
Manolis Pasparakis

09:50-10:05 *Plasticity of different cell death pathways in intestine and skin*
Alessandro Annibaldi

10:05-10:30 *Damage-activated proteolysis as a potential key player in the plant wound response*
Simon Stael

10:30-11:00 Coffee Break

11:00-11:25 *Maize signalling peptides in immunity and cell death*
Johana Misas-Villamil

11:25-11:40 *Caspase-8's non-apoptotic role is critical for orchestrating exaggerated inflammation during severe SARS-CoV-2 infection.*
Stefani Bader

11:40-12:05 *Assembly and Molecular Architecture of FADD:Caspase-8 Signalling Platforms*
Marion MacFarlane

12:05-12:30 *Regulation of inflammatory disease signaling by RIP kinases*
Domagoj Vucic

13:00-15:00 Lunch & Meet the Speakers

PROGRAMME

Day 2 | 12 October 2024

SESSION 3: PATHOGEN INTERACTION AND CELL DEATH REGULATION

Chair: Melanie Fritsch and Farid El Kasmi

- 15:00-15:25 *An unexpected response from Legionella to ER stress*
Elisabeth Hartland
- 15:25-15:50 *Cell death defenses against bacillary dysentery*
Russell E. Vance
- 15:50-16:05 *A bacterial network of T3SS effectors counteract host pro-inflammatory response and cell death to promote infection*
Hui Wen Yeap
- 16:05-16:30 *Emerging metabolic signals in immunity determining host-microbe interaction outcomes*
Alga Zuccaro
- 16:30-17:00 **Coffee Break**
- 17:00-17:25 *Spatially resolved physiochemical root immunity and its role in microbiome assembly*
Tonni Grube Andersen
- 17:25-17:50 *Cell death mechanisms in both the host and the pathogen*
J. Marie Hardwick
- 17:50-18:05 *Targeting Tumor Intrinsic TAK1 Induces Immunogenic Cell Death to Drive Robust Tumor Growth Inhibition in vivo*
Stephen Tahir
- 18:05-18:30 *Sub-lethal signals in the mitochondrial apoptosis pathway: physiological event or adverse effect?*
Georg Häcker
- 18:30-20:00 *Poster Session 1 with drinks / POSTERS WITH ODD NUMBERING*
- 20:30-22:00 **Dinner & get-together**

PROGRAMME

Day 3 | 13 October 2024

SESSION 4: CELL DEATH AND INFLAMMATORY SIGNALLING (1)

Chair: Alessandro Annibaldi and Johana Misas-Villamil

- 09:00-09:25 *Inborn errors of cell death*
Hiro Oda
- 09:25-09:50 *Harnessing Immunogenic Cell Death in Cancer*
Pascal Meier
- 09:50-10:05 *Role of Necroptosis in B cell lymphoma*
Mila Daoud
- 10:05-10:20 *Differential impact of canonical and non-canonical NF- κ B pathway on the execution and responses of necroptosis during hepatocarcinogenesis*
Leonie Keysberg
- 10:20-10:45 *Cell Surface Receptor Kinases in Plant Autoimmunity*
Libo Shan
- 10:45-11:15 **Coffee Break**
- 11:15-11:40 *Leveraging DANGEROUS MIX Autoimmunity to Investigate Immunological Cell Death in Plants*
Eunyoung Chae
- 11:40-11:55 *Type three effector HopBF1 of Pseudomonas syringae induces systemic micronecroses in Nicotiana benthamiana*
Juan Ochoa
- 11:55-12:10 *Unmasking the role of metacaspases as stress sensors*
Nerea Ruiz
- 12:10-12:35 *Cell death, inflammation and healing*
John Silke
- 12:35-13:00 *Non-canonical ubiquitination in cell death and inflammatory signalling pathways*
Henning Walczak
- 13:00-14:30 **Lunch & Meet the Speakers**
- 14:30-18:00 **Free afternoon with group activities**
Activity 1: Boat trip (glass-bottom) to the Medes Islands Natural Reserve
Activity 2: "Camí de Ronda" seaside walk
- 19:30-20:30 **Dinner & get-together**
- 8 20:30-22:30 Poster Session 2 with drinks / **POSTERS WITH EVEN NUMBERING**

PROGRAMME

Day 4 | 14 October 2024

SESSION 5: CELL DEATH AND INFLAMMATORY SIGNALLING (2)

Chair: Florian Schmidt and Maud Bernoux

- 09:00-09:25 *Mechanisms of IL-1 β secretion – new insights into an old question*
Mo Lamkanfi
- 09:25-09:50 *The NLRP3 inflammasome as a key player in tauopathies*
Christina Ising
- 09:50-10:05 *Ribotoxic stress triggers intranuclear NLRP1 inflammasome activation*
Kateryna Shkarina
- 10:05-10:30 *How to control death: Regulation of cell death activity of plant CC-type NLRs*
Farid el Kasmi
- 10:30-11:00** Coffee Break
- 11:00-11:25 *Bioengineering mRNAs that regulate cell death signalling*
James Vince
- 11:25-11:40 *MTCH2 at the core of the apoptotic foci*
Hector Flores-Romero
- 11:40-12:05 *What is the relative importance of MCL-1's Anti-Apoptotic vs Apoptosis-
Unrelated Functions in vivo?*
Kerstin Brinkmann
- 12:05-12:30 *Protease substrates and inhibitors at the plant-pathogen interface*
Renier van der Hoorn
- 13:00-15:00** Lunch & Meet the Speakers

Session 6: Membrane integrity and cell death

Chair: Kay Hoffmann and Eunyoung Chae

- 15:00-15:25 *The contrasting cell death mechanisms by GSDMD and NINJ1*
Hao Wu
- 15:25-15:50 *Illuminating the apoptotic pore*
Ana Garcia-Saez

PROGRAMME

Day 4 | 14 October 2024

- 15:50-16:05 *Dissecting the roles of mitochondrial disintegration in plant cell death*
Eugenia Pitsili
- 16:05-16:30 *Dissecting the roles of mitochondrial disintegration in plant cell death*
Jijie Chai
- 16:30-17:00 Coffee Break
- 17:00-17:25 *Divergent membrane trafficking of NLR immune receptors to trigger cell death*
Tolga Bozkurt
- 17:25-17:40 *An endomembrane localized CNL-type immune receptor with a conserved deletion in the N-terminal signaling domain functions in cell death and immunity*
Sruthi Sunil
- 17:40-18:05 *Interrogating the molecular details of gasdermin pore formation with camelid nanobodies*
Florian Schmidt
- 18:05-18:30 *Mechanism and biological function of NINJ1-dependent*
Petr Broz

WORKSHOP CLOSING

- 18:30 Closing
Núria Sánchez Coll and Hamid Kashkar
- 19:30 Conference Dinner & Disco Night

Day 5 | 15 October 2024

DEPARTURE

Scheduled transfer services:

Departures are at 5:00 AM, 7:00 AM, and 10:00 AM.

LIST OF POSTERS

- P01** Regulation of mitochondrial structure and integrity by SMAC. Tarek Amer, *Institut für Medizinische Mikrobiologie und Hygiene, Universitätsklinikum Freiburg*
- P02** Unmasking AtMC1: Identifying metacaspase substrates in plant programmed cell death. Joel Ayet, *Centre for Research in Agricultural Genomics (CRAG)*
- P03** Escaping death: taking insights from acquired thermotolerance in Arabidopsis. Mayur Bajaj, *Indian Institute of Science Education and Research (IISER) Tirupati*
- P04** Nonhost solanaceous plants employ NLRs to redundantly recognize multiple effectors from the citrus canker pathogen. Caio Vinícius Cardoso Mendes, *University of São Paulo*
- P05** A short splicing isoform antagonizes ZBP1 to fine-tune cell death and inflammatory responses. Yasmin Carvalho Schäfer, *CECAD, University of Cologne*
- P06** Exploring the Molecular Architecture of TNFR1-associated via Death Domain protein (TRADD) – a key Regulator of TNF α and TLR3/4 Signalling. Andrew Craxton, *MRC Toxicology Unit, University of Cambridge*
- P07** Type I interferon signaling suppresses activation of inflammasome sensor NLRP1a. Léonie Dejas, *Ghent University*
- P08** Empagliflozin and Sacubitril/Valsartan Normalize the Morphology of Mitochondria Observed on Electron Microscopy and Hypoxia in Embryonic H9c2. Seyma Dumur, *Istanbul Atlas University*
- P09** The role of S100A12 and Toll-like receptor 4 in assessment of disease activity in familial Mediterranean fever and juvenile idiopathic arthritis. Seyma Dumur, *Istanbul Atlas University*
- P10** A nucleoside signal generated by a fungal endophyte regulates host cell death and promotes root colonization. Nick Dunken, *University of Cologne, Institute for Plant Sciences, Zuccaro Lab*
- P11** NAD⁺ depletion regulates TLR immunity and triggers TIR-induced death in human cells. Nino Espinas, *Universit yof Lausanne*
- P12** Gasdermin C isoforms: Promoters of tissue damage or regeneration? Juliana Farah, *Institute of molecular Immunology Munich*
- P13** RIPK1 kinase activity promotes inflammatory disease in mice when apoptosis and necroptosis are blocked. Melanie Fritsch, *University Hospital Cologne, Insitute for Molecular Immunology*
- P14** Shigella induces Caspase-8 activity in order to block macrophage necroptosis. Hossein Hozhabri, *Institute for Molecular Immunology/ Faculty of Medicine/ University of Cologne*
- P15** The Rab GTPase Rab11b and Rab11-FIP2 are key regulators of the NLRP3 inflammasome. Harald Husebye, *CEMIR, IKOM, NTNU*
- P16** Linear ubiquitination in Metabolic Inflammation. Armel Hyoubi Kemgang, *Univerisity of Cologne / CECAD*
- P17** Macrophage cell death instructs fibroblast-repair functions in skin wound healing. Louise Injarabian, *University Hospital of Cologne, Department of Dermatology*
- P18** Cryo-EM structural analysis of Caspase-8 in complex with FADD provides mechanistic insights into catalytic domain dimer assembly. Matthew Jackson, *MRC Toxicology Unit, University of Cambridge*

LIST OF POSTERS

- P19** Understanding cell death signaling of receptor-like proteins in plants. Denis Janocha, *ZMBP - Uni Tübingen*
- P20** Studying the underlying mechanisms of synergistic cell death induction in the combination of TRAIL and chemotherapeutic drugs. Michèle Jost, *University of Konstanz*
- P21** The Bordetella effector protein BteA induces host cell death by disruption of calcium homeostasis. Jana Kamanova, *Institute of Microbiology, Czech Academy of Sciences*
- P22** Macrophage-specific Ripk1 knockdown reduces macrophage inflammation and atherosclerosis progression in Ldlr^{-/-} Mice. Denuja Karunakaran, *Monash University*
- P23** Therapeutic knockdown of MLKL reduces diet-induced obesity and promotes insulin sensitivity. Denuja Karunakaran, *Monash University*
- P24** Multi-reporter cell lines: fluorescent reporter for temporal detection of cell death in infection. Myrto Katsipoulaki, *Leibniz-Institut für Naturstoff-Forschung und Infektionsbiologie Hans-Knöll-Institut*
- P25** Regulated cell death in the pathogenesis of cystic kidney diseases. Emilia Kieckhöfer, *University Hospital Cologne, CECAD Cluster of Excellence, Nephrolab*
- P26** A Mavs-dependent type I IFN pathway contributes to non-viral liver injury upon hepatic autophagy impairment. Vangelis Kondylis, *Department of Gastroenterology, Hepatology and Infectious Diseases, University Hospital Düsseldorf*
- P27** Viral gene expression leads to reduced mitochondrial resilience and altered cell death decisions in primary hepatocytes. Pauline Krebs, *Institute of Molecular Immunology (Klinikum rechts der Isar der Technischen Universität München)*
- P28** Regulation of Cell Death and Inflammatory Response through Proteolytic Events. Ina Lisewski, *CMMC COLOGNE*
- P29** ADAR1 inhibits ZBP1-dependent cell death induced by endogenous dsRNA. Juliane Lohmann, *CECAD, University of Cologne*
- P30** Understanding Necroptosis Execution: Optogenetic Control of MLKL. Asma Majoul, *university of Cologne CECAD*
- P31** N Tissue-Specific Responses to *Bipolaris sorokiniana* in Resistant and Susceptible Barley Cultivars. Pouria Bahrami, *University of Cologne*
- P32** Defining the functions and mechanisms of programmed cell death during mouse heart development. Kristel Martinez Lagunas, *Institute of Experimental Cardiology*
- P33** REGULATION OF NECROPTOSIS BY MLKL ISOFORMS. Veronica Martinez-Osorio, *CECAD, Universität zu Köln*
- P34** Release of mitochondrial proteins in sub-lethal signaling. Philip Neubert, *Institute for Medical Microbiology and Hygiene, Universitätsklinikum Freiburg*
- P35** The Role of Inflammation and Regulated Cell Death in HNSCC Development and in Therapeutic Approaches for Late Stage Disease. Lorraine O'Reilly, *The Walter and Eliza Hall Institute of medical Research*

LIST OF POSTERS

- P36** **Unleashing BOK: First-in class Drugs Targeting MCL1-BOK Transmembrane Interaction.** Mar Orzaez, *Príncipe Felipe Research Center*
- P37** **Role of cFLIP in cell death suppression to maintain tissue homeostasis.** Matea Poggenberg, *CMMC*
- P38** **Molecular mechanism of caspase-9 CARD oligomerization using cryo-EM and NMR spectroscopy.** SWASTI RAWAL, *Medical University of Graz*
- P39** **Membrane permeabilization in necroptosis.** Uris Ros, *CECAD - University of Cologne*
- P40** **Non-apoptotic functions of BCL-2 homologs and their role in drug-induced liver necrosis.** Franziska Rudolf, *University of Konstanz*
- P41** **Cell Death-Related Transcriptomic Signatures in Mammary Epithelial Cells Induced by Gram-Positive Bacteria.** Ghulam Asghar Sajid, *Erciyes University, Kayseri Turkey*
- P42** **Deciphering the role of the Arabidopsis Metacaspase 1 in heat stress response.** Marta Salas-Gómez, *Centre for Research in Agricultural Genomics (CRAG)*
- P43** **Raptinal induces widespread membrane damage and cell death associated inflammation.** Sophia Schwojer, *Ludwig-Maximilians-University Munich*
- P44** **Apoptosis counteracts the manifestation of mitochondrial disease in liver.** Jens Seeger, *Institute for Molecular Immunology*
- P45** **Necroptosis Is a Context-Dependent Regulator of Gut Inflammation.** Chiou Shebe, *Walter and Eliza Hall Institute of Medical Research*
- P46** **Unleashing anti-tumor immunity through the induction of immunogenic cancer cell death via pyroptosis.** Jingyi Shen, *Research Institute of Molecular Pathology (IMP)*
- P47** **Secondary hemophagocytic lymphohistiocytosis is NLRP3 inflammasome driven and is targetable by BET inhibitors.** Farzaneh Shojaee, *Walter and Eliza Hall Institute of Medical Research*
- P48** **Proteolytic activation of executioner caspase-3 and -7 regulates distinct physiological processes.** Noëlle Sieg, *Institute for Molecular Immunology*
- P49** **Differential cell death-dependent functions of MLKL in mediating alcoholic and non-alcoholic steatotic liver disease.** Michael Singer, *Klinik für Gastroenterologie, Hepatologie und Infektiologie*
- P50** **Unraveling the Mechanisms of Plant Cell Death Under Heavy Metal Stress.** Hanwant Singh, *Mohanlal Sukhadia University*
- P51** **Functional Characterization of Cell Death Markers in Zea mays.** Nina Solia, *Uninversity of Cologne, Institute of Plant Science*
- P52** **From Senescence to Cell death: Exploring Novel Therapeutic Approaches in Malignant Pleural Mesothelioma (MPM).** Iswarya Sreeram, *IDIBELL, Barcelona*
- P53** **Hierarchical regulation of macrophage cell death by caspases.** Besarta Thaqi, *Institute for molecular Immunology, University Hospital Cologne*

LIST OF POSTERS

- P54** **Novel chemotype NLRP3 inhibitors that target the CRID3-binding pocket with high potency.** Lieselotte Vande Walle, *Ghent University*
- P55** **Auto-phosphorylation at S161, S166 and T169 licenses RIPK1 for cell death induction.** Li Xiaoming, *CECAD, University of Cologne*
- P56** **A stealthy pathogen effector co-opts a host transport regulator under immune surveillance by the NRC immune network.** Lok Him Yuen, *Imperial College London*
- P57** **Regulation of NLR activation by the immune kinase BIK1.** Cyril Zipfel, *University of Zurich*
- P58** **Correlative structural and functional analysis of Gasdermin D oligomers at the plasma membrane.** Özgün Doğa Aşık, *Department of Biology/Chemistry and Center for Cellular Nanoanalytics (CellNanOs), University of Osnabrück, Germany*
- P59** **From humans to plants: Can we use a human cell death network to identify cell death interactions in Arabidopsis?** Daniela Sueldo, *Department of Biology, Norwegian University of Science and Technology (NTNU), Trondheim, Norway*

VENUE

EDEN ROC HOTEL

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