

# Molecular Omics

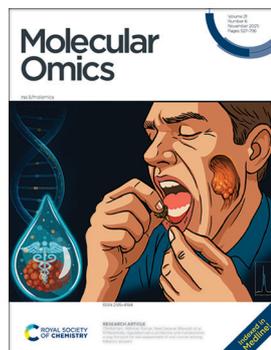
Research and reviews in omic sciences, including genomics, proteomics, transcriptomics, metabolomics, glycomics and lipidomics

[rsc.li/molomics](https://rsc.li/molomics)

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

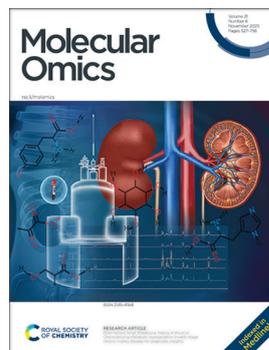
## IN THIS ISSUE

ISSN 2515-4184 CODEN MOOMAW 21(6) 527-796 (2025)



### Cover

See Chintamani, Abhinav Kumar, Neel Sarovar Bhavesh *et al.*, pp. 594–606. Image created by Dr Krishn Verma and reproduced by permission of Prof. Neel Sarovar Bhavesh from *Mol. Omics*, 2025, 21, 594.



### Inside cover

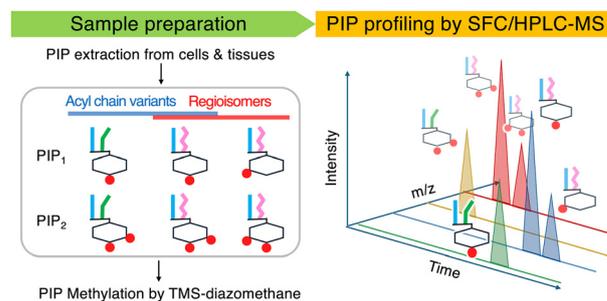
See Dharmendra Singh Bhadauria, Neeraj Sinha *et al.*, pp. 607–620. Image reproduced by permission of Neeraj Sinha from *Mol. Omics*, 2025, 21, 607.

## REVIEWS

536

### Mass spectrometry-based profiling of phosphoinositide: advances, challenges, and future directions

Yuki Ishino, Yuta Shimanaka, Junken Aoki and Nozomu Kono\*



545

### Deep learning methods and applications in single-cell multimodal data integration

Franklin Vinny Medina Nunes, Luiza Marques Prates Behrens, Rafael Diogo Weimer, Gabriela Flores Gonçalves, Guilherme da Silva Fernandes\* and Márcio Dorn\*

#### Diverse Single-Cell Omics Technologies

Genomics, Epigenomics, Transcriptomics, Proteomics

#### Deep Learning Tools

e.g., scICAN, scGAL, scMSI, scMDC, scMauI, SAILERX, scGEMOC, scHGA, MarsGT, MinNet, scGPT, scDART

#### Key Deep Learning Architectures

Neural Networks, Convolutional Neural Networks, Autoencoders (and VAEs), Generative Adversarial Networks, Graph Neural Networks

#### Challenges and Future Directions

Enhance interpretability, computing requirements, labeled datasets, federated learning.



# Advance your career in science

with professional recognition that showcases  
your **experience, expertise and dedication**

## Stand out from the crowd

Prove your commitment  
to attaining excellence in  
your field

## Gain the recognition you deserve

Achieve a professional  
qualification that inspires  
confidence and trust

## Unlock your career potential

Apply for our professional  
registers (RSci, RSciTech)  
or chartered status  
(CChem, CSci, CEnv)

## Apply now

[rsc.li/professional-development](https://rsc.li/professional-development)

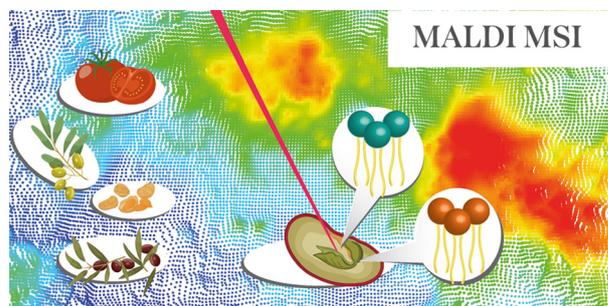


## REVIEWS

566

## MALDI mass spectrometry imaging in plant and food lipidomics: advances, challenges, and future perspectives

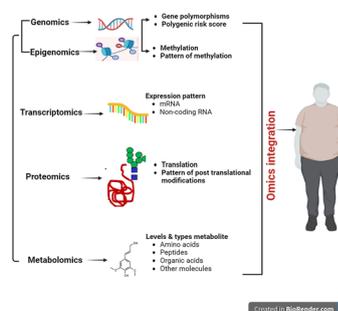
G. Ventura, M. Bianco, I. Losito, T. R. I. Cataldi and C. D. Calvano\*



582

## The omics revolution in obesity: from molecular signatures to clinical solutions

Mohammad Mustafa, Amr A. Arafat, Waleed Alhazzani, Faisal Kunnathodi, Sarfuddin Azmi, Riyasdeen Anvarbatcha, Ishtiaque Ahmad and Haifa F. Alotaibi\*



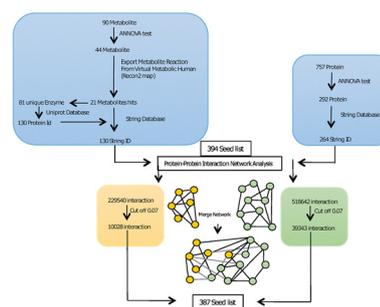
Credited in BioRxiv from 2025

## RESEARCH ARTICLES

594

## Differentially regulated saliva proteome and metabolome: a way forward for risk-assessment of oral cancer among tobacco abusers

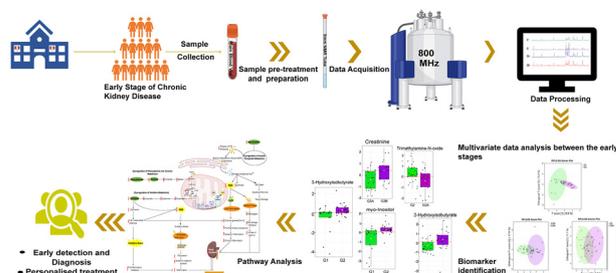
Bolaji Fatai Oyeyemi, Shruti Dabral, Amit Paramaraj, Sandhya Srinivasan, Gagan Deep Jhingan, Dhiraj Kumar, Chintamani,\* Abhinav Kumar\* and Néel Sarovar Bhavesh\*



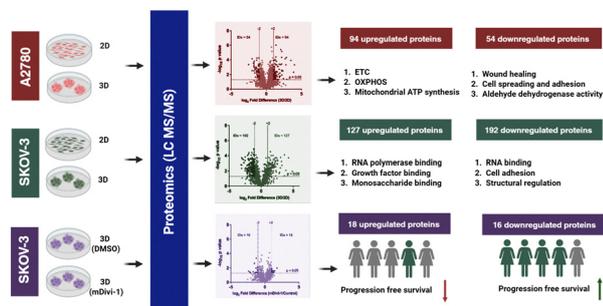
607

## Characterizing metabolic dysregulation in early-stage chronic kidney disease for diagnostic insights

Upasna Gupta, Amrita Sahu, Dharmendra Singh Bhaduria,\* Bikash Baishya and Neeraj Sinha\*



621



### An altered proteome in ovarian cancer stem-like cells: profiling of the mDivi-1 induced proteome and its clinical significance

Manita Raina, Tejan Lodhiya, Rahail Ashraf, Kalpana Tankay, Arunaja K., Raju Mukherjee\* and Sanjay Kumar\*

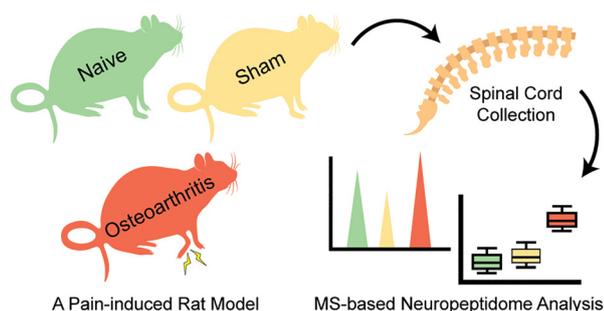
633



### Comparative glycomic analysis of hawk (*Rupornis magnirostris*), caiman (*Caiman latirostris*) and sea turtle (*Caretta caretta*) tear films

Ana Cláudia Raposo, Sheryl Joyce B. Grijaldo-Alvarez, Gege Xu, Michael Russelle S. Alvarez, Carlito B. Lebrilla, Ricardo Wagner Portela and Arianne Oriá\*

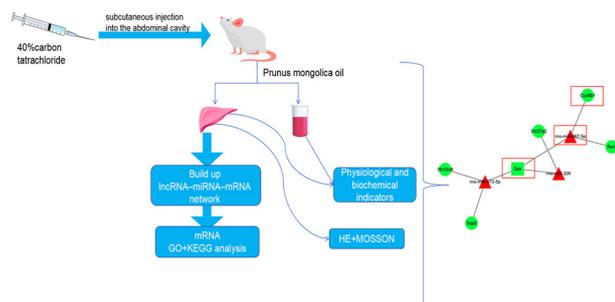
645



### Global spinal cord peptidome profiling in response to osteoarthritis in rats

Gaoyuan Lu, Marilyn Frézier, Colombe Otis, Vu Ngoc Huong Tran, Bertrand Lussier, Guillaume Saint-Jean, Helene Beaudry, Eric Troncy\* and Lingjun Li\*

657



### *Prunus mongolica* oil attenuates hepatic fibrosis via a lncRNA-mediated ceRNA network targeting dual PGC-1 $\alpha$ /PPAR $\gamma$ and TGF- $\beta$ /Smad3 pathways

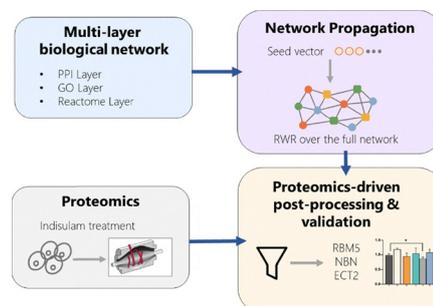
YiJie Hou, HongBing Zhou, XiaoGang Li, JiaXing Gao, Hong Chang, Jia Wang, YingChun Bai, ShuYuan Jiang, ShuFang Niu, WanFu Bai\* and SongLi Shi\*



668

## Network-driven identification of indisulam neo-substrates for targeted protein degradation

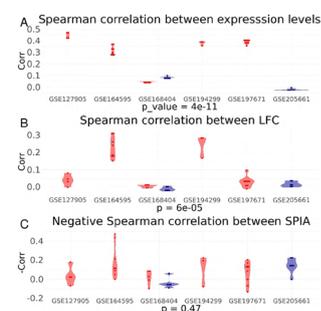
Andrew F. Jarnuczak,\* Orli Yogev, Angelo Andres, Stephanie K. Ashenden, Cheng Ye, Fiona Pacht, Andrew Zhang, Maria Emanuela Cuomo and Meizhong Jin\*



678

## Multi-omics data integration for topology-based pathway activation assessment and personalized drug ranking

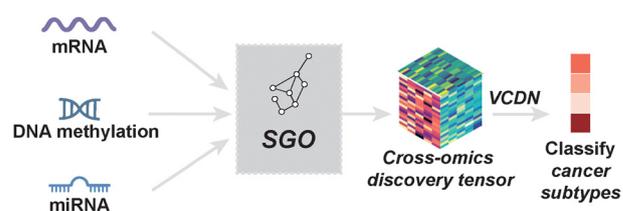
Nicolas Borisov, Yaroslav Ilnytsky, Boseon Byeon, Olga Kovalchuk\* and Igor Kovalchuk\*



690

## MOFNet: a deep learning framework for multi-omics data fusion in cancer subtype classification

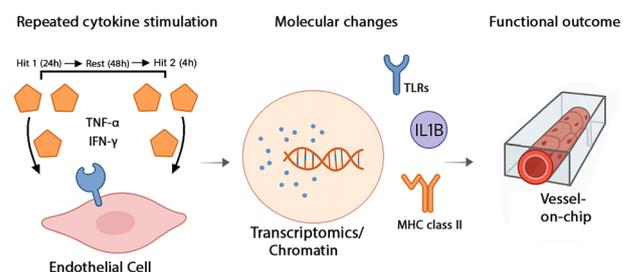
Guangji Zhang, Chunxiao Zhang, Pengpai Li, Duanchen Sun, Zhixia Yang and Zhi-Ping Liu\*



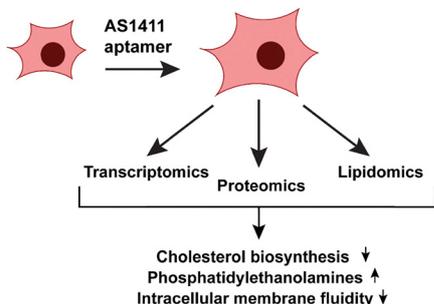
706

## Cytokine-induced memory-like responses in endothelial cells link chronic inflammation to vascular disease risk

Kieu T. T. Le, Nick Keur, Heleen Middelkamp, Thuy Linh Do, Albert van den Berg, Valeria Orlova, Leo A.B. Joosten, Mihai G. Netea, Cisca Wijmenga, Iris Jonkers, Sebo Withoff, Andries D. Van der Meer and Vinod Kumar\*



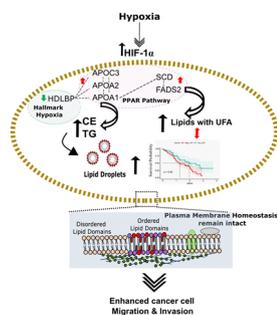
723



## Nucleolin perturbation alters membrane lipid homeostasis

Eitan Erez Zahavi, Ida Rishal, Juan A. Oses-Prieto, Alexander Brandis, Sergey Malitsky, Maxim Itkin, Šárka Pokorná, Florencia Cabrera-Cabrera, Natjan-Naatan Seeba, Robert Risti, Aivar Löökene, Anthony H. Futerman, Alma L. Burlingame, Mike Fainzilber and Indrek Koppel\*

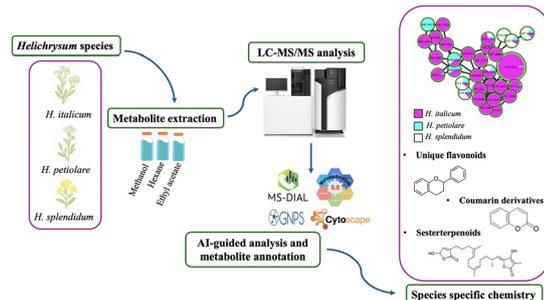
736



## Hypoxia-induced alterations in lipid polyunsaturation and associated proteins drive aggressive metastasis in pancreatic cancer via the PPAR/hypoxia pathway

Prema Kumari Agarwala, Avinash Singh, Sanjeeva Srivastava and Shobhna Kapoor\*

747

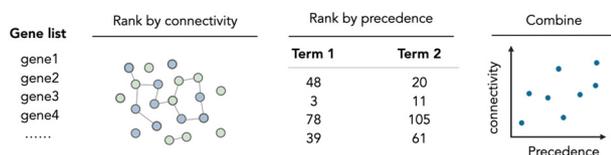


## Mapping the *Helichrysum* metabolome: uncovering species-specific chemistry through an AI-guided LC-MS/MS workflow

Motseoa Mariam Lephatsi, Mpho Susan Choene, Abidemi Paul Kappo, Ntakadzeni Edwin Madala and Fidele Tugizimana\*

760

DeSciDe: A graphic tool for gene list curation that integrates discrete search terms



## DeSciDe: a tool for unbiased literature searching and gene list curation unveils a new role for the acidic patch mutation H2A E92K

Cameron J. Douglas and Ciaran P. Seath\*



768

***STUB1* (CHIP) – a prognostic marker in cancer**

Subhajit Karmakar, Mouli Chatterjee, Malini Basu and Mrinal K Ghosh\*

