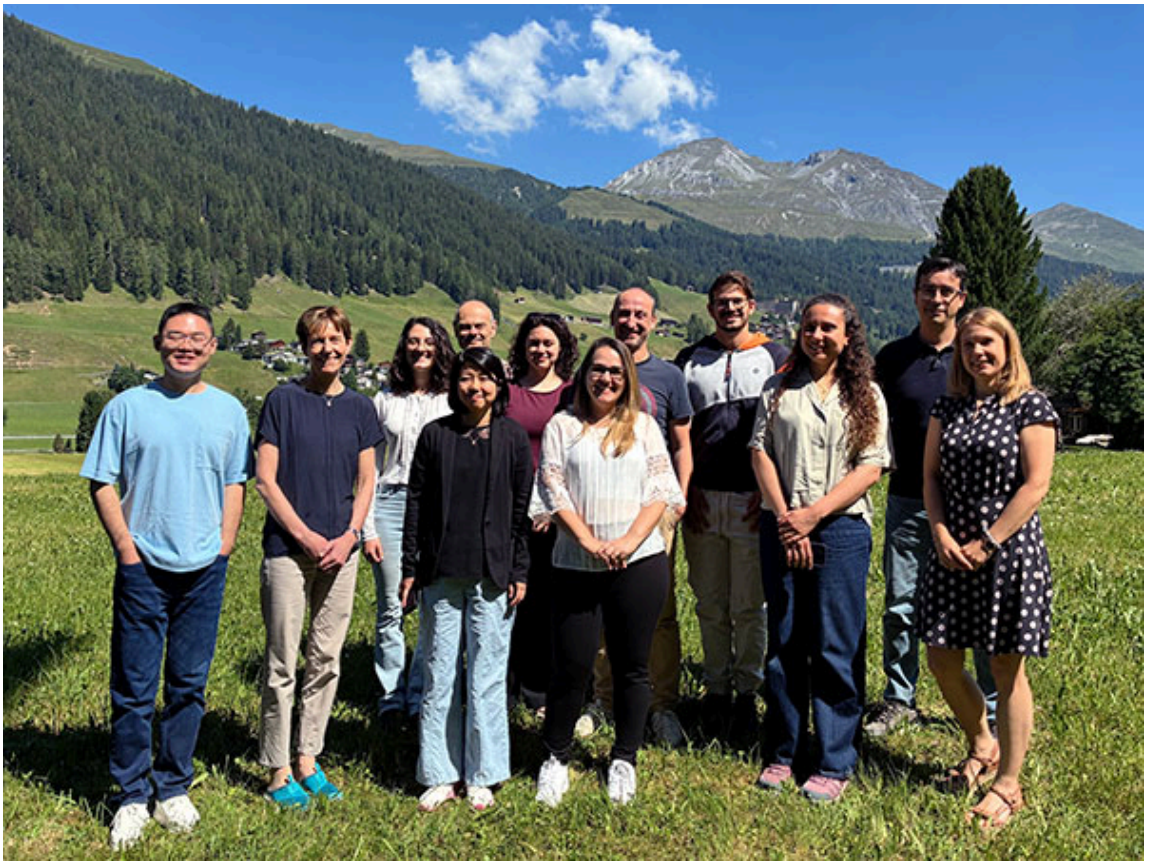
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Newsletter Issue #4





Welcome...

... to the **4th and final issue** of our SINPAIN newsletter. With this, we are completing 54 months full of exciting scientific research and look back to the most recent activities. This includes a set of final results videos, as well as latest publications and dissemination activities. **Thank you for joining us on our journey!**

Explore the SINPAIN Results



Discover the scientific achievements of **SINPAIN** through video interviews, written Q&As and an overview of the project's main findings.

All results on our website

Meet the team – Interview series with young researchers






Our interview series with young and early-stage researchers has continued. Please meet **Rafaela Zani Coeti** from Saarland University who tested the new treatments in a clinically relevant in vivo model of osteoarthritis; **Ricardo Sinella** responsible for the bioinformatic analysis at Università del Piemonte Orientale; **Federica Ciliberti** from Reykjavik University, who worked on full image processing and data analysis workflow for knee osteoarthritis; and **Claudia Beltran** from Biogipuzkoa who developed polymer-based non-viral vectors for different biomedical applications.

Read the full interviews

Events

In the past year, **SINPAIN partners** had ample opportunity to present SINPAIN results at conferences and engage in networking with the community. We are presenting you with the highlights here.

MEDICON 2026



At MEDICON on 14-17 September 2026 in Siena, Italy, **Ida Maruotto** from **Reykjavik University** showed how medical imaging and artificial intelligence can contribute to a more comprehensive and clinically useful assessment of knee osteoarthritis.

SINPAIN @MEDICON

ARI Orthopaedics 2026 Cartilage & Disc



On 22-24 June 2026, **AO Research Institute (ARI)** organized and hosted the ARI Orthopaedics Meeting in Davos. Numerous researchers from SINPAIN were actively involved in the scientific programme with a keynote speech, presentations or posters.

SINPAIN @ARI Orthopaedics

SINPAIN Publications

Several journal articles were published in the last months. We are pleased to share a wrap-up.



Crosslinking strategies govern the morphology and biological performance of decellularized extracellular matrix particle-tyramine-modified hyaluronic acid hydrogels

The study shows that incorporating decellularized extracellular matrix (dECM) particles into hyaluronic acid-based hydrogels can improve their mechanical and biological properties for cartilage regeneration. Among the tested approaches, HRP/Eo crosslinking enabled more homogeneous dECM integration, better matrix retention and stronger cartilage-related cellular responses.

Read the publication

Objective stratification of knee osteoarthritis stages using a semi-supervised learning approach on multimodal MRI-CT cartilage features

This study presents a semi-supervised learning approach that combines MRI and CT imaging to objectively classify different stages of knee osteoarthritis, even with limited labeled data. The results demonstrate reliable disease stratification and identify imaging biomarkers that could support earlier diagnosis and more accurate assessment of cartilage degeneration.

Read the publication

Impact of automated and manual segmentation errors on knee osteoarthritis classification using MRI-registered data on CT scans

Machine learning (ML) approaches using quantitative imaging biomarkers show promise for automated OA classification, but their reliability under imperfect image segmentation remains unclear. This study evaluated the robustness of

cartilage-based radiodensity and morphological features derived from MRI-registered CT scans against simulated segmentation errors.

Read the publication

Mechanistic insights into cartilage-sensory nerve crosstalk in osteoarthritis progression

This review highlights cartilage-sensory nerve crosstalk as a key mechanism underlying osteoarthritis pain, moving beyond a structure-centric view of disease progression. Mechanistic insights into neuroinflammatory and mechanosensitive pathways support the development of biomarkers for pain phenotyping and patient stratification.

Read the publication

Feature Selection in Healthcare Datasets: Towards a Generalizable Solution

The increasing dimensionality of healthcare datasets presents major challenges for clinical data analysis and interpretation. This study introduces a scalable ensemble feature selection (FS) strategy optimized for multi-biometric healthcare datasets.

Read the publication

With this newsletter, we say goodbye. We hope you enjoyed the wild ride with us through the past 4.5 years.

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