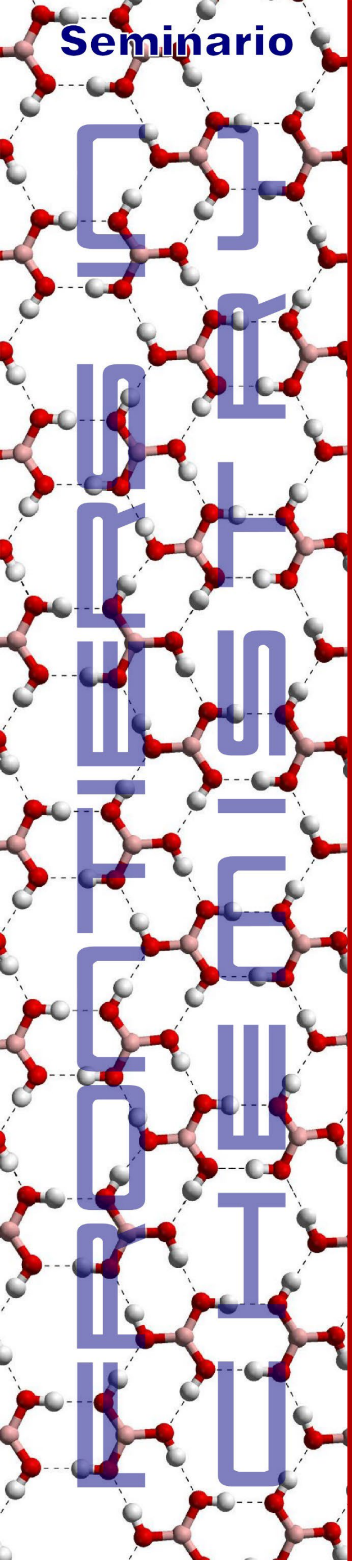

Università degli Studi di Padova
Dipartimento di Scienze Chimiche

Ciclo di Seminari 'Frontiers in Chemistry'

Prof. Helma Wennemers

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Synthetic Collagen Peptides – From Structure to Function

Monday July 7th, 2025, 11:30AM

ROOM A - NASINI

Department of Chemical Sciences, via Marzolo 1, I-35131 Padova

Collagen, the most abundant protein in mammals, is a key contributor to the strength and stability of skin, bones, and connective tissue.

Collagen formation is thus vital for the integrity of skin, tendons, and the tissue in essentially any organ. Excessive collagen formation is, however, characteristic of fibrotic and malignant diseases, which include major global health issues.

We have used collagen model peptides (CMPs) to understand the stability of collagen at the molecular level and to establish functional synthetic collagen triple helices.[1] These include hyperstable triple helices[2] and heterotrimeric collagen.[3-5] Building on these data, we designed and synthesized chemical probes for the simultaneous monitoring and targeting of lysyl oxidase (LOX)-mediated collagen cross-linking.[6] The probes enable the visualization of collagen formation with spatial resolution *in vivo* and in tissue sections.[6,7]

For selected references, see:
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   b) M. C. Deen, L. B. Boll, H. Wennemers *Chimia*, 2024, *78*, 673.
2. J. Egli, C. Esposito, M. Müri, S. Riniker, H. Wennemers, *J. Am. Chem. Soc.* 2021, *143*, 5937
3. V. Islami, P. Bittner, T. Fiala, N. B. Hentzen, R. Zenobi, H. Wennemers, *J. Am. Chem. Soc.* 2024, *146*, 1789
4. N. B. Hentzen, V. Islami, M. Köhler, R. Zenobi, H. Wennemers, *J. Am. Chem. Soc.*, 2020, *142*, 2208
5. T. Fiala, P. Bittner, R. Heeb, V. Islami, C. Söll, A. Pruška, R. Zenobi, H. Wennemers, *Angew. Chem. Int. Ed.* 2025, e202503353
6. M. R. Aronoff, P. Hiebert, N. B. Hentzen, S. Werner, H. Wennemers, *Nat. Chem. Biol.* 2021, *17*, 865
7. P. Hiebert, G. Antoniazzi, M. Aronoff, S. Werner, H. Wennemers, *Matrix Biol.* 2024, *128*, 11

Your presence will be very much appreciated

Prof. Stefano Mammi
Head, Department of Chemical Sciences

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