



HTL Biotechnology

CONSEIL NATIONAL DE LA CHIMIE








05/12/2024



Anne-Laure Gaudry – head of innovation and R&D

HTL Biotechnology and the **tectonic shift**

- 1**  **World leader** in pharmaceutical-grade biopolymers
Fast Growing and profitable organization with revenues > €100m
- 2**  300 employees with **Global presence (Europe, US, Asia)**: Innovation-R&D, Operations and Commercial
 Dynamic Expansion in Asia
- 3**  **A unique and compelling portfolio** of high-value pharma grade biopolymers in a billion \$ + playing fields
 Continuously **enhancing portfolio** with novel molecules in partnership with customers
- 4**  **Longstanding customer partnership** in core business (Aesthetic Medicine, Ophthalmology, Rheumatology)
 A growth pockets strategy into **new applications** (oncology, regenerative medicine,..) with high unmet needs
- 5**  **Uncompromised and repeatable quality**, best customized services , and digital transformation
An eco-responsible company with an ESG chart with concrete actions and ambitious commitments



A unique portfolio of biopolymers **used in patient care today...**



PDRN & PN (Sodium DNA)

Hyaluronic acid and platform of functionalized HA

Heparosan

Collagen

Cataract surgery

Skin ageing

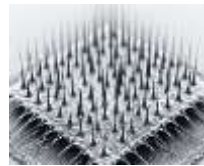
Dry eye syndrome

Knee osteoarthritis

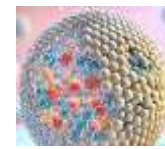
... and to be used in patients' unmet needs tomorrow



**Regenerative
medicine**

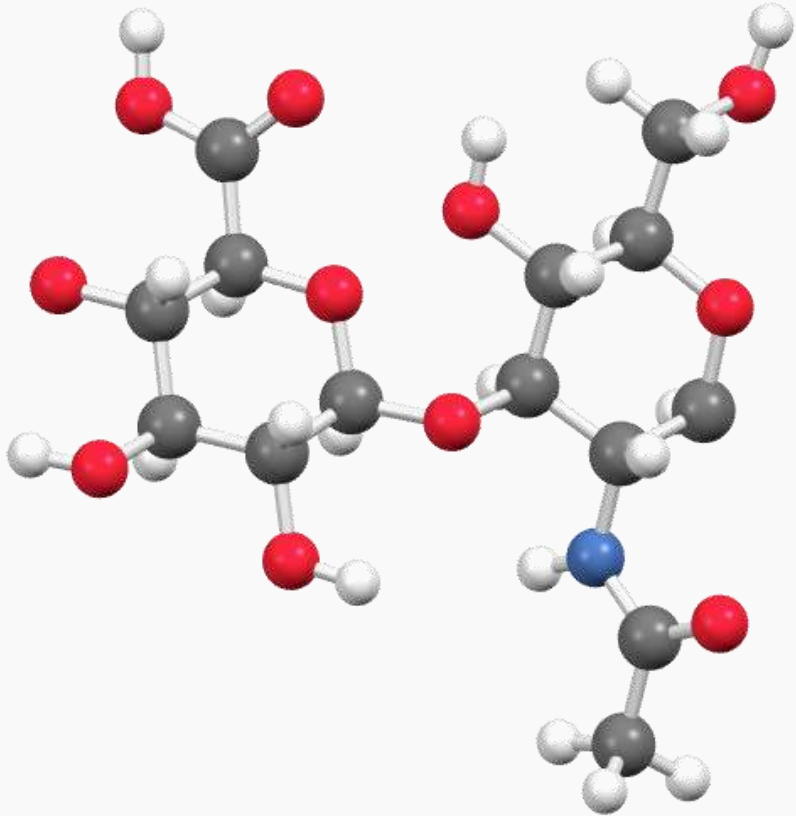


Micro-needles



**Drug delivery (ocular
medication, vaccines,
oncology)**

Hyaluronic Acid: a multipurpose biopolymer



A natural component of many soft tissues

- Major component of connective tissue, essential component of skin, lungs, intestine, bones, myelin sheath of neurons
- Biocompatible
- Biodegradable
- Safe



Known biomechanical properties

- Tissue hydration
- Lubrication, shock absorption
- Visco-elasticity
- Scaffolding

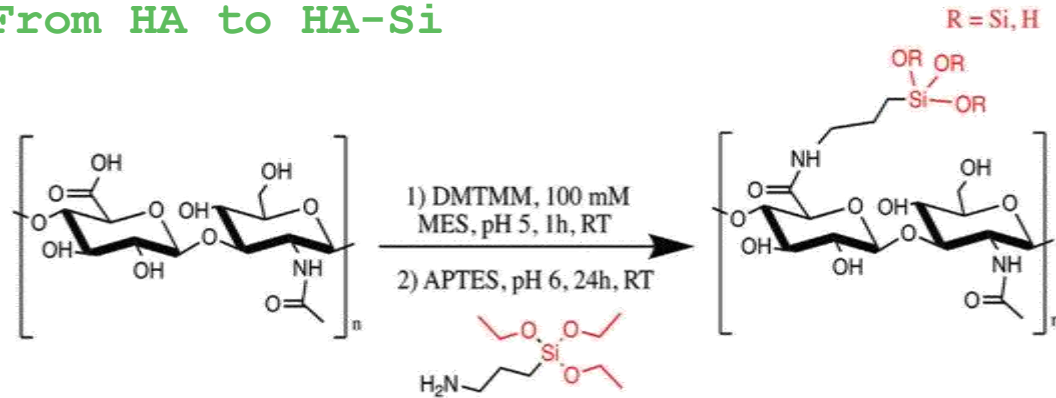


Involved in biological processes

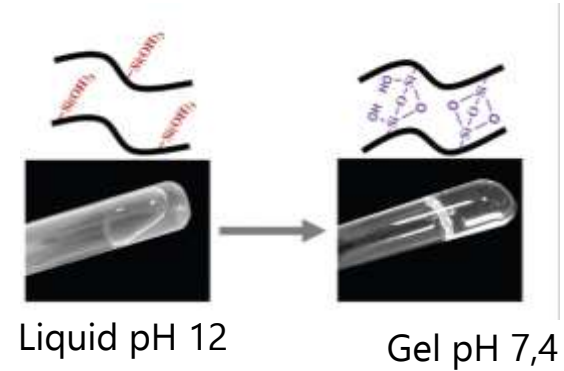
- Inflammation and immunity
- Wound healing, tissue repair
- Modulation of cell proliferation

Silanized hyaluronic acid: a pH triggered self crosslinking hydrogel

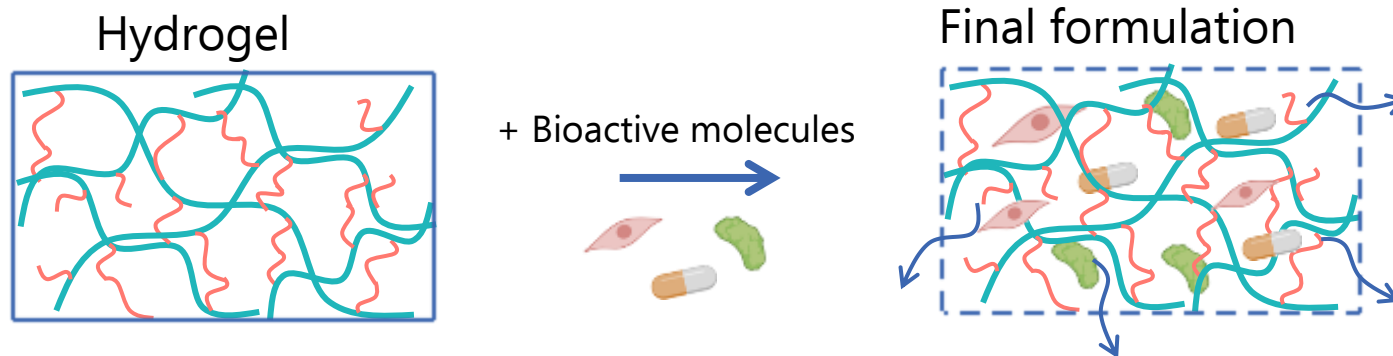
1 From HA to HA-Si



2 From HA-Si to hydrogel



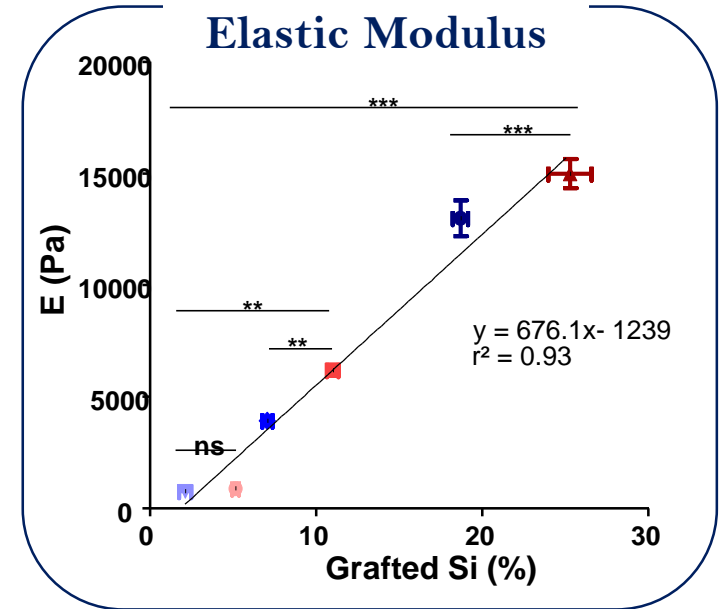
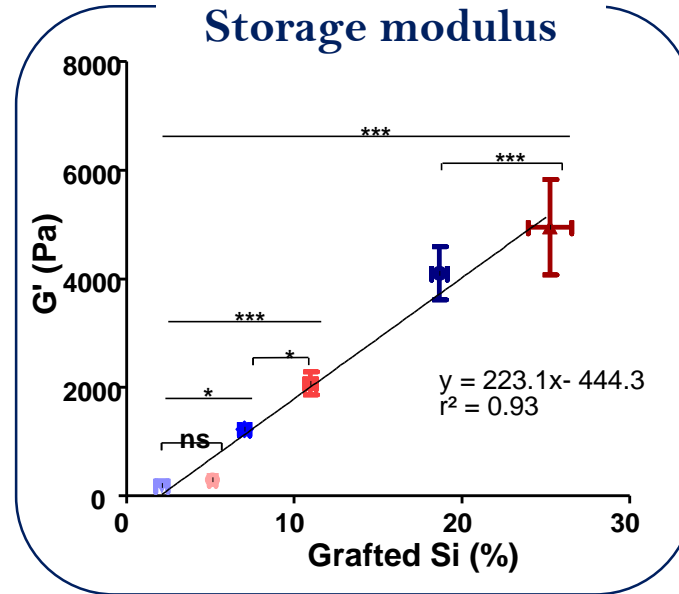
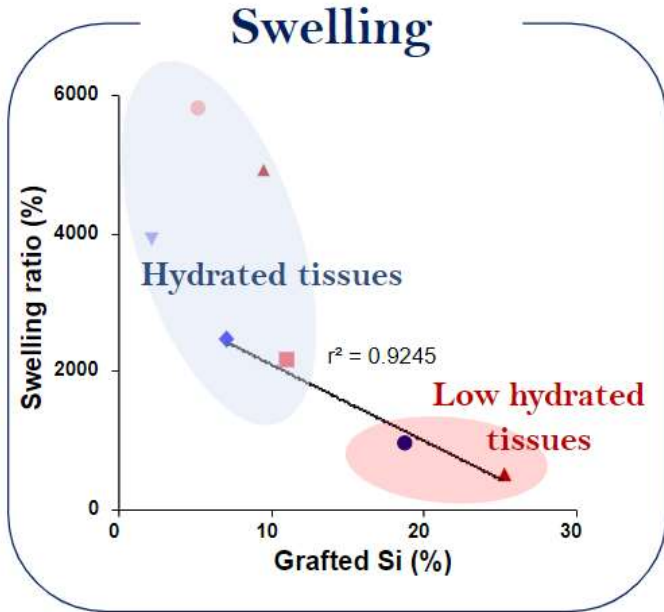
3 Drug delivery OR Regenerative matrix



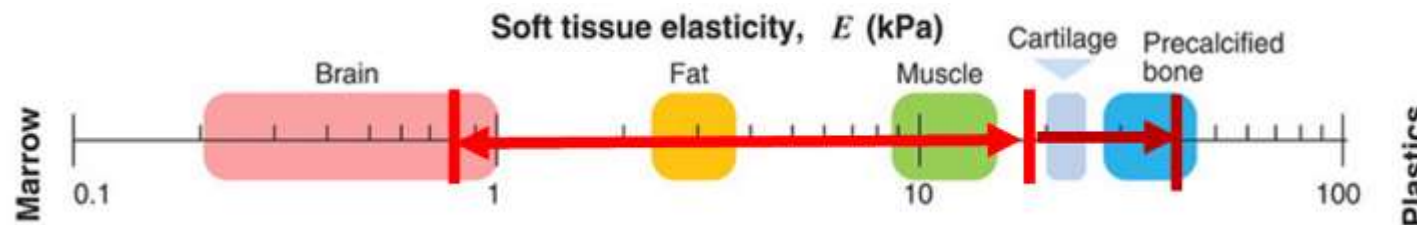
Tunable systems

Flegeau, K. *et al.* In Situ Forming, Silanized Hyaluronic Acid Hydrogels with Fine Control Over Mechanical Properties and In Vivo Degradation for Tissue Engineering Applications. *Adv. Healthc. Mater.* 9, 2000981 (2020).

A pH triggered self-cross linking hydrogel platform with Tuneable mechanical properties



- LDS
- MDS
- △ HDS
- LMW
- ◇ MDS
- HDS
- MMW



Discher *et al.* Science, 2009

Create breakthrough innovation for medical applications

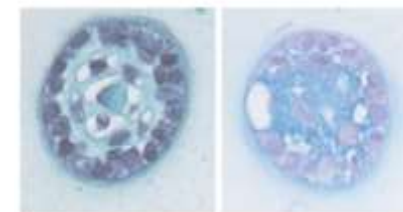


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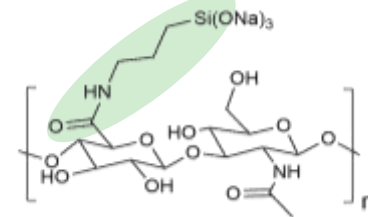
3D bioprinting



Tissue engineering

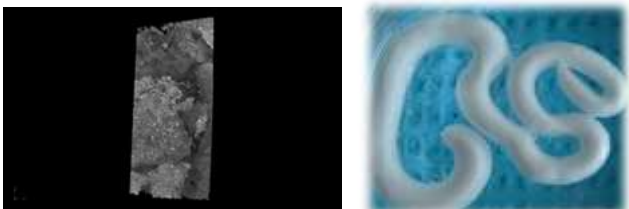


Cells protection & Regenerative medicine



HA-Si (Patented technology)

Injectable Bone substitute



Assisted Cell Therapy



Heart

Matthieu et al., *PLoS One* 2012

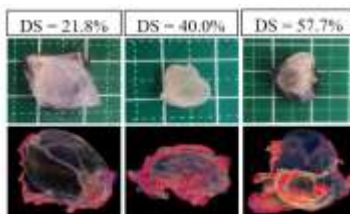


Colon

L. Moussa et al. / *Biomaterials* 115 (2017) 40–52



Tissue fillers



Drug delivery Systems

Dental pulp tissue engineering



Periodontal treatment

