



(LONG STORY SHORT)

A JOURNEY THROUGH VALORIZATION AND INDUSTRIAL TRANSFER

Jonathan Lao





THE INVENTIONS: NEW BIOMATERIALS FOR REPAIRING BONE

1 - Composites





2- Organic / Inorganic Hybrids











= inorganic network (for example, SiO₂)

3 - Hybrid Coatings





2012

July: declaration of invention submitted to the University Blaise Pascal









the University

Blaise Pascal





2014

(3 inventions at once!)

porosity inside implants (PCT4)

at increasing the Technology Readiness Level of inventions

aiming at dental applications

July: declaration of invention submitted to the University **Blaise Pascal**

FEBRUARY: 1ST PATENT APPLICATION FILED

March: preliminary research report by French Patent Office: lack of unity of invention

- June: starting of the PCT (international) phase / initial application is finally divided into 3 divisional patent applications ! PCT1, PCT2, PCT3
 - November: new patent application filed (4th invention) on a new way to vary the
- 2014-16: pre-industrialization project, 700 k€ granted by SATT-GC aiming
- **Discussion with CEO of OST-Développement to target a market:**





NDA signed with OST-Développement company (bone substitute manufactory,

> **MORE THAN BONE REGENERATION** since 1993









June: term sheet for licence agreement signed with OST-Développement company







October: starting of the industrial transfer project: first round of in vitro and in vivo animal tests, scale-up of the manufacturing process from bench to pilot

December: 5th patent

application filed on doping implants with nutrients to stimulate bone remodeling **(PCT5)**

2018

September: licence agreement finally signed with OST-Développement company (bone substitute manufactory, Clermont-Ferrand) for PCT2, PCT3, PCT4

FR and US patents delivered for PCT2

FR, EP, HK patents delivered for PCT3

PCT1 is abandoned







Again, a new valorization 2022 structure is created and in charge of the IP of the university (CAI is born)

Licence agreement signed with OST-Développement for exploitation of PCT5

EP patent delivered for PCT2



















WHERE WE ARE NOW

- Patents still pending (not delivered) in some regions ! CA and HK patents pending for PCT2 CA, AU, JP patents pending for PCT4 CA, EP, US, CH, JP, BR pending for PCT5
- **2022: second round of animal testing, aiming at** evaluating the inflammatory response.
- **2023**?

Industrial transfer finished. **Pilot production line built at the factory.** All cellular and animal tests will have to be done again on products manufactured on the pilot line.

- 2024 ? All tests successful and CE market approval
- 2025? Inventions finally reach the market?







MORE THAN BONE REGENERATION since 1993



LESSONS FROM THE PAST

- A chain is only as strong as its weakest link: don't put everything in a single patent
- Collect the maximum data about your invention:
 - the more knowledge about your invention, the easier to answer patent offices notifications
 - Private company always doubts and needs to be convinced with facts & data
- Relying on a valorization structure and IP consulting is NOT an option



THANKS FOR YOUR ATTENTION





