

## Abstract 39

### STEP-BY-STEP RESEARCH PROJECT (INTEGRATED APPROACH TO THE PATIENT WITH NEUROLOGICAL ACUTE INJURY): A SUCCESSFUL PARTNERSHIP.

Practical case

Celli P.\*

*Bologna-Ozzano "Rita Levi Montalcini" Technopole ~ Ozzano dell'Emilia (BO) ~ Italy*

Abstract text:

Step-by-Step research project developed innovative solutions for the treatment of acute neurological injuries. It integrated, in a scientific and technological pathway close to the clinical environment, expertises of diverse industrial chains, thus developing innovative products also ensuring cross-contamination in the training of researchers devoted to interdisciplinary research.

Step-by-Step had 2 main objectives:

1. Development of new drug delivery solutions based on materials and drugs already on the market, to ensure a long-term therapeutic effect (reduction of inflammation and remyelination) without side effects.
2. Clinical development and validation of a measurement system that can provide an assessment of the evidence-based rehabilitation pathway, integrating the existing clinical scales with reliable and repeatable locomotion signals, correlable to scale values.

Originality and value

The originality of the project relates not only to the scientific contents, but also to the specific model of partnership adopted.

The policy-maker (Regione Emilia Romagna) encouraged the adoption of a vast and open model of partnership as the co-financing was restricted to projects consistent with the regional strategy of innovation (S3: Smart Specialization Strategy) and promoted by a number of entities belonging to the regional innovation eco-system as large as possible.

The financial resources made available through the POR-Fesr 2014-2020 European Fund for Regional Development, became a strong incentive to develop a partnership model suitable to make real synergy among all the public and private players.

The structure of the partnership was as follows:

- Project coordinator: Bologna University (Health Sciences and Technologies - Interdepartmental Center for Industrial Research (CIRI-SDV))
- Project Partners: IRET Foundation; Ferrara University (Technology Lab for Advanced Therapies); Montecatone Rehabilitation Institute; Confindustria Emilia Romagna (Industry Network)
- Project industry Partners: Transmed Research s.r.l.; RiMos s.r.l.; AcZon s.r.l.

The Bologna-Ozzano Technopole, whose mission is putting in contact research and industry, facilitated the promotional effort, aiming at spreading the results of the research activities.

It is worth noting that besides public institutions, private research entities and for profit companies, nonprofit organizations were involved as well. Not only the type of organization, but also the size for each organization was a critical factor, as the partnership included complex entities like universities, and lean and quick research teams as those belonging to IRET Foundation.

Internal decision making procedures and times of reaction were so different that the risk of an unsteady process was real.

A significant effort therefore was made at project management level to align the various strategies, planning methods and approaches in order to guarantee adequate effectiveness of the partnership.

#### Results and findings

The effectiveness and the value of the research project was confirmed by the filing of a patent application: Electrospun fibers for a local release of an anti-inflammatory and a promyelinating drug, owner: Alma Mater Studiorum – Bologna University - PCT/IT2018/000084 (14/06/18), and by meeting all the deadlines initially set for the project.

The invention is a new solution of pharmacotherapy achieved through the introduction of 2 drugs (anti-inflammatory and promyelinating) in a polymeric material, obtained by electrospinning, which allows the local controlled release of the 2 drugs, to be used by surgical implant in the prevention of secondary degeneration in the traumatic event.

The invention validation was performed by a preclinical efficacy study published in top internal journal in the field:

Bighinati A, Focarete ML, Gualandi C, Pannella M, Giuliani A, Beggiato S, Ferraro L, Lorenzini L, Giardino L, Calzà L. Improved functional recovery in rat spinal cord injury induced by a drug combination administered via an implantable polymeric delivery system. *J. Neurotrauma*, 2020, 37:1708-1719

#### Impact & transferability

Besides the scientific results and the technology transfer activity it is worth noting the good impact of the partnership model, which led to the development of another research project, as natural continuation of Step-by-step.

In this second phase IRET Foundation has become project coordinator and the Bologna-Ozzano Technopole is going to play a strong role in the dissemination of the results.

An important lesson learnt is that when project partners are so different it is critical to pay great attention to the management aspects in order to take advantage of diversity instead of being blocked by it. When the environment is mostly academic and scientific this is not so obvious, as the expectation is to devote 100% of attention and energy to the research activity, and a patient work at cultural level is needed to take all onboard in the initial phase of the project.

Owner:

Bologna-Ozzano "Rita Levi Montalcini" Technopole

The Bologna-Ozzano Technopole is part of the regional network on 10 infrastructures, situated in 20 different locations in Emilia Romagna to host and organize activities and services to support innovation among companies, territories and citizens. The Technopole network is co-financed by Emilia Romagna Region as part of its effort to boost innovation.

Geographical origin:

Italy, Emilia Romagna, Bologna

References (Harvard style):

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