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Feature Article

# The Concept of Organization and the Strategic Position of Chemistry in a Generic Research and Development Project Focused on SARS-CoV-2

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**Abstract.** The tragic events related to the spread and pathologies caused by SARS-CoV-2 prompted the authors, whose working interests have always focused on academic and industrial scientific research, to provide their contribution in the planning of a generic applied research project. The article focuses on the synergy between the management organization of a research group and the strategic position that chemistry should occupy among other scientific disciplines in the case of scientific technological projects.

**Keywords.** Covid19, Scientific Research, SARS-CoV-2

## 1. Introduction

The period we are living in is so dense with information about virulence, spread and pathologies caused by SARS-CoV-2 that it dramatically affects not only our physiology, but also the psychology in our daily life, making tomorrow highly uncertain.<sup>1a, 1b</sup>

This continuous hammering can trigger an anxious phenomenon in the mind that can reflect in the vision of life, increasing the fear of contracting the virus compared to the probability of being infected.

In the world, however, several applied research groups<sup>2</sup> are currently working to develop a vaccine<sup>3</sup> that would save lives and, from a psychological point of view, would probably largely reduce fears and anxieties of contracting the infection.

Having said this, with this article the authors offer their personal contribution to a generic applied research project, focused on SARS-CoV-2, by developing two different but synergistic aspects, i.e. the main organizational aspects of a research team and the position that Chemistry must occupy if it operates together with other scientific disciplines in the same scientific-technological project.

The key points are:

I. The concept of Organisation: this section outlines the fundamental principles that must be accepted and adopted by research groups, that would benefit from the methodological support to optimise and/or improve their research activities, both basic and applied.

II. The position of Chemistry: in this second section the central position of Chemistry among the scientific disciplines is explained, particularly in the case of an important research topic such as SARS-CoV-2.

In the following paragraphs these two important issues are discussed in depth.

## 2. The organization of research and the position of chemistry

### 2.1 General

The first article that we published in *Substantia* on the Covid-19 issue offered a brief presentation on the relevance of Chemistry in a multidisciplinary research team, giving a general introductory and preparatory overlook.<sup>4</sup>

This second contribution describes the organizational aspects of a research team and the position that Chemistry must assume in those multidisciplinary projects that have a technological-scientific character.

The two topics are very different in terms of contents and goals to be achieved, but, in order to increase the probability of success of the project, they must coexist in a strictly synergistic way.

### 2.2 The concept of Organization in R&D activities

Organization is defined: "*The set of processes and structures with which people interact and manage them, in a coordinated manner, through a series of rules, to achieve a common and shareable goal*".<sup>5a, 5b</sup>

The organization represents therefore the best management condition to start any activity, ensuring a regular progress for the entire duration of the project. The organization is based on three main functions: the mission, the project, and the strategies. All the other functions necessarily depend on them, and in particular the layout of the Laboratory structure and the team of researchers.

A necessary and sufficient condition for the achievement of the objectives is that all functions are strategically aligned with each other and that each person, finally, must be able to interact within a multidisciplinary perspective.

All these assumptions lead to the conclusion that: "*The organizational system, defined above, and the corresponding project activity are joined up into a single strategic relationship*".

### 2.3 The position of Chemistry in multidisciplinary projects

The position and the role of Chemistry is strictly dependent on the nature of the project, so they must be evaluated case by case according to the specific features of the project.

After defining the general project, therefore we can propose an active presence of Chemistry and give it a central position.

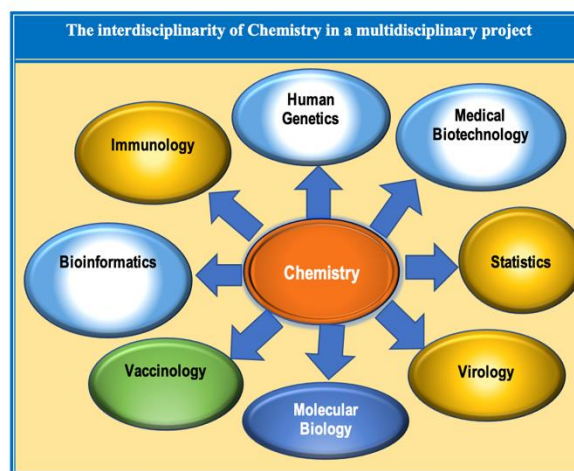
This central position draws its origin from some peculiar characteristics of this science and from the set of laws that make Chemistry unique, such as:

- The great analytical-instrumental variability to which has been added for some time computational chemistry for the key role it plays in the development of antiviral drugs.<sup>6</sup>
- The peculiar epistemological characteristics;
- Its laws, few and fundamental;
- The innovative contents applied to the study of complex systems.

## 3. General conclusions

In this last paragraph we report the conclusions we reached in developing this general project focused on SARS-CoV-2. Let us look at them briefly.

- The Organization, intended as the set of functions with which people interact in a coordinated way, represents the optimal management condition to start and successfully complete any project.
- The position of Chemistry, within the described project, must absolutely be central with respect to all the other disciplines, because of its interdisciplinary characteristic that allows a dialogue with almost all the other scientific disciplines and because of its unique epistemological properties.
- The characteristics of the project also define the functional, technical and scientific capabilities of the staff.



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