IRRIVIANS Are Forever

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The San Bortolo Hospital of Vicenza was originally born in the year 1002 as a monastery and subsequently became a religious infirmary. Over the years, the cloisters were transformed into a university and then a community hospital for the city of Vicenza (fig. 1a, b).

Born in 1969, the Department of Nephrology Dialysis and Renal Transplantation of the San Bortolo Hospital in Vicenza has a long-lasting tradition of excellence in patient care. The renal ward, together with the modern dialysis center, the peritoneal dialysis center and the transplantation unit represent a complex structure in which patients with kidney disease may find a perfect environment for adequate medical care and edge technology.

The mission of the Department is summarized by three words: patient care, teaching and research. The last two components are mostly carried out on the third floor of the Nephrology building defined International Renal Research Institute of Vicenza (IRRIV).

This is a modern multidisciplinary structure where physicians, biologists, pharmacologists, engineers and economists work together in an advanced research environment. Several areas of investigation represent the core activity of IRRIV and multiple disciplines are

Fig. 1. The original cloisters and the modern building of the Nephrology Department.
involved with a staff mostly represented by young fellows and scientists coming from different parts of the world.

The Institute contains a museum with many documents and old prototypes of devices and machines that have been conceived and developed in Vicenza over several years of research (fig. 2a, b).

The main body of the institute, however, is constituted by laboratories where the acronym GRIN (genetics, robotics, informatics, nanosciences) represents the focus of interest (fig. 3a, b).

There is a special laboratory for analysis of genetic mutations in patients with adult polycystic kidney disease. Molecular biology and biomarkers are studied in a specific laboratory while another group of research is dedicated to cell culture studies and in vitro toxicology.

Other sciences like statistics, pharmacology, bioengineering and applied physics are also part of the research stream. An intense activity of research and development of new equipment for dialysis and new medical devices and biomaterials is carried out by the engineers although for each project, a multidisciplinary team of investigators and scientists is significantly contributing (fig. 3b).

Among the most recent achievements, IRRIV has developed a new miniaturized dialysis machine called
CARPEDIEM (an acronym for Cardio Renal Pediatric Dialysis Emergency Machine) used for the severe kidney dysfunction of newborns and small infants. This unique machine has contributed to save many lives. Other projects include the wearable artificial kidney (WAK) and many other new machines for an improved dialysis quality and safety (fig. 4).

I am particularly proud to guide this group of investigators and give the stimulus for creating an international research task force, with a multidisciplinary approach.

Fellows from all over the world visit the International Renal Research Institute of Vicenza and spend time for research and clinical training within this Department of San Bortolo Hospital.

Periodically, fellows who define themselves ‘IRRIVIANS’ come back to Vicenza from the country of origin to visit the home structure where their career started and their research initiated (fig. 5, 7).

In the Institute web site (www.irriv.com), they clearly state that Vicenza is more a school of life rather than a simple school of nephrology. Physicians, engineers, biologists, pharmacologists, statisticians and economists meet every day to tackle a given problem from all possible points of view. This approach allows an important cross fertilization among disciplines and the international nature of the staff adds a multiethnic flavor to our research (fig. 7).

The typical technological vocation of the institute is mitigated by an additional interest in humanistic medicine and values such as ethics and esthetics. The Medical Culture Center ‘Giuseppe Roi’ was created to preserve and study the humanistic side of medicine focusing the research activity on cultural aspects of medicine. It represents an environment where medicine intersects with philosophy, arts and general culture. The center strives to match the technological research with values such as empathy, solidarity, esthetics and patient care. The center is intended to strengthen the doctor–patient relationship.

Professor Umberto Veronesi, a leading worldwide recognized scientist inaugurated the structure with his honorable presence, recognizing the important fusion of care, research and teaching. All institutional activities are supported by the nonprofit organization ‘Associazione Ami—

**Fig. 4.** Professor Claudio Ronco with the CARPEDIEM machine and the Bioengineering Laboratory.

**Fig. 5.** Distinguished scientist Professor Umberto Veronesi visits the IRRIV hall of fame containing memories from all IRRIVIANS.
Fig. 6. The Department and IRRIV emblems.

Fig. 7. Number of publications and citations and the young members of IRRIV.
ci del Rene di Vicenza Onlus' through moral and fundraising activities (fig. 8).

Every time one of our fellows leaves the institute it is like to have a little piece of heart leaving the community. On the other hand, any time one of our fellows reproduces the 'Vicenza Model' in his/her own country and allows research and teaching to flourish for the benefit of new generations, the feeling is that our seeds have been transported by the wind of friendship and science and have found a perfect soil to grow and develop.

When our fellows return to us for pursuing new studies or being interested in research, we always hear them to say: we are a family, we are friends, we are IRRIVIANS and IRRIVIANS are forever (fig. 7, 9).

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**Fig. 8.** The international origin of IRRIVIANS and the multiple laboratories of the institute.

**Fig. 9.** A group of IRRIVIANS in 2015.