

## **ME, “VIRUS TRAFFICKER”:**

### ***A STORY OF SCIENCE AND BITTER INJUSTICE***

**by Ilaria Capua**

#### **Chapter Outline**

All biography, by virtue of the genre itself, illustrates character, and Capua’s writing is no exception in demonstrating the traits that constitute a successful scientist. “What do you want to be when you grow up?” For Capua, the answer to this question has been the same for as long as she can remember: “Among my schoolmates, one aimed to be a singer, another a fashion designer, a dancer, or an actress: as for me, I have always known I would have become a researcher.”<sup>1</sup> A true vocation. “ABBA would sing *I Have a Dream, a Song to Sing* and, when I, as a teenager, used to listen to them in my tiny-teeny room, I felt I had too a dream to make true, a song to play. What kind of song, I was not yet aware, but I knew the genre. I would have enjoyed conducting research on cancer, bacteria, animals, or, as it turned out, viruses. What I really cared about was discovering, studying, understanding and uncovering the logic behind nature.”<sup>2</sup>

After graduating with highest honors in veterinary medicine at the University of Perugia, Capua began her first research position, “at a public facility in a small town in Abruzzo, with a laboratory as big as an under-stair closet, far from the national scientific centers.”<sup>3</sup> For Capua, however, it did not matter where her first lab was located: “Following a dream I have had since I was a little girl, I have just started on my path. Maybe it is an uphill path, but it is a promising one anyway.”<sup>4</sup> Indeed, she had a plan “to become a specialist in several research fields to improve and finally do research, real research.”<sup>5</sup>

After seven years in Abruzzo, where she and her lab partners learned how to work, laugh and have fun together, Capua moved to the Experimental Zootechnical Institute of Veneto at Legnaro. Soon after she had started her new position, Capua and her team were faced with the

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<sup>1</sup> Capua (2017): *Io, Trafficante di Virus*, p. 18.

<sup>2</sup> Capua (2017): p. 18.

<sup>3</sup> Capua (2017): p. 23.

<sup>4</sup> Capua (2017): p. 23.

<sup>5</sup> Capua (2017): p. 23.

greatest avian influenza epidemic that at the time, had ever been recorded. They developed novel diagnostic and intervention strategies, including the DIVA (Differentiating Vaccinated from Infected Animals) strategy, the first to succeed in eradicating avian flu by vaccination. DIVA is now included in EU legislation as one of the tools for combatting avian influenza infections. “If you believe in it, if you don’t give up, it is possible to build a research center of excellence even in Italy, even in a public institution. The creative Italian mind often has revolutionary ideas, but it lacks systemic support to transform those ideas into reality. At the Institute, however, we did it. We demolished a stereotype.”<sup>6</sup>

In 2006, Capua challenged the World Health Organization (WHO), igniting an international debate on genetic data-sharing in the face of an epidemic. At the time, the H5N1 avian influenza was spreading uncontrollably across three continents, yet scientists were not sharing genetic data. Instead, they held onto the sequence data until journal publication. “There is an outbreak out there, which is spreading simultaneously in three continents, and it could result in human infections and affect millions of people, especially in developing countries. And we are concerned, instead, about who publishes first.”<sup>7</sup> She decided instead to deposit the genetic sequence of the first known African strain of A(H5N1) in the GenBank public database rather than the usual WHO Los Alamos Influenza Sequence Database, because the latter was accessible only to fifteen laboratories. Her leadership led to a change in the international approach to pandemic preparedness. Following her initiative, several countries and international agencies began sharing their avian influenza data more freely. On August 22, 2006, researchers from the US Centers for Disease Control (CDC) entered data on some 650 flu virus genomes into GenBank. Afterwards, many countries and non-governmental organizations including the World Organization for Animal Health (OIE), the United Nations’ Food and Agriculture Organization (FAO), and finally the WHO, endorsed and promoted sequence data-sharing.

In chapters 4 to 7, Capua vividly depicts her years at the Institute. From 1998 until 2012, Capua dedicated herself completely to transforming her laboratory into a world-class research center, at times in the face of considerable hardship and personal sacrifice. The group under her supervision grew from ten to seventy scientists, drawn from all over the world, and remains a leading international group in the field of influenza virology and emerging viral diseases. Capua

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<sup>6</sup> Capua (2017): p. 33.

<sup>7</sup> cf. Capua (2017): p. 41 and ff.

herself in 2007 was among the winners of the *Scientific American* 50 award. In 2008, she was included in *Seed's* "Revolutionary Minds" for her leadership in science policy and promoting the global sharing of information. In 2011, she received the most prestigious award in veterinary medicine, the Penn Vet World Leadership Award.

During her years at the Institute, however, Capua also had to confront, often alone, many adversities. Through the author's words, the reader encounters a strong, courageous woman, someone able to turn "obstacles into opportunities and problems into possibilities." As a result, in 2013, when Mario Monti, a former EU Commissioner serving as Italian Prime Minister, asked Capua to run for parliament, she stepped up and decided to expose herself to the dangers of the political arena.

Capua was elected to Parliament, becoming vice-president of the Science, Education and Culture Commission of the Italian Chamber of Deputies. Capua entered politics at Monti's invitation because he wanted candidates with technical expertise to join his reformist party. But, her experience proved to be surreal. Like a scientist studying an animal behavior, Capua minutely describes the pretentious behavior of her colleagues and the overly formal procedures of the Chamber of Deputies. "In a short time I collided with a new world, of whose existence and diverse inhabitants I had not been aware: there were crocodiles and giraffes, worker bees and macaques, elephants and woodpeckers, scorpions and lionesses: a Noah's Ark."<sup>8</sup> Even in the complicated world of Italian politics, detached as it is from scientific research, Capua was able to support initiatives on behalf of science. But the most affecting part of *Io, Trafficante di Virus* is more universal. It describes an Italian woman scientist's struggle to overcome fake news and the spread of misinformation.

In April 2014, Dr. Capua became a victim of fake news. Less than a year after her election, Capua learned from Lirio Abbate, a journalist who was writing a story for the Italian magazine *L'Espresso*, that she was indicted, together with her husband and 38 other people, for corruption, international virus trafficking and deliberately causing an epidemic out of personal interest. Specifically, the criminal charges against Capua included: allegations that she deliberately set off avian influenza outbreaks that also caused a human epidemic; criminal conspiracy aimed at corruption, handling stolen goods, and administration of drugs that endanger

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<sup>8</sup> Capua (2017): p. 131.

public health. The investigation, spanning more than a decade, was based only on extensive wiretapping.

The documents collected in the investigation were illegally leaked out to the press. “On April 3rd, at 4pm... the cover photo in the new issue of L’Espresso first appeared online: a man in a disturbing-looking protective suit, handling boxes marked with the biohazard symbol.



### **TRAFFICKERS OF VIRUSES.**

Agreements between scientists and companies to produce and sell animal vaccines. Avian influenza virus strains smuggled by mail, which risked spreading the disease. The inquiry from NAS<sup>9</sup> and the magistrates of Rome into the big “epidemic” affair.

That image and those words will be stuck on me forever, like a verdict, as if I was branded with infamy.”<sup>10</sup> What followed was a report with the elements of a bio-thriller.

Capua immediately asserted her complete innocence, explaining why the science behind those accusations was wrong, and defended her reputation from violent political attacks and unfair press coverage. Although there was no evidence beyond the taped calls, some of the criminal accusations that she had to face were punishable with life imprisonment.

Capua explains that she had been under criminal investigation since 2005, which resulted in a formal accusation when Abbate’s article was published. “Astonishment, confusion and anger, while everybody keeps asking me the same questions: Why are they now talking about the avian flu outbreaks that happened between 1999 and 2008? What are they trying to get here?”<sup>11</sup> It transpired that during the years 2005-2007, when Capua was managing avian influenza

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<sup>9</sup> The Carabinieri’s health investigation department.

<sup>10</sup> Capua (2017): cf. p. 144 and ff.

<sup>11</sup> Capua (2017): cf. p. 144.

epidemics worldwide and campaigning for greater transparency and data sharing, her phone was being tapped by Italian investigators. In a report summarizing 17,000 pages, without scientific review, nor any investigative activity, she was accused, among other crimes, of illegally providing viral strains to pharmaceutical companies. According to the report, these viruses caused an epidemic of H7N3/HPAI/Pakistan 95 in poultry and affected 7 people. It was clear that the investigators did not take time to do any fact checking, and they actually confused different viruses and geographical locations, also connecting unrelated events occurring in different years.

Also, the police officers did not have the scientific background to understand the conversations they were listening to. Therefore, they completely misinterpreted conversations about data sharing and international collaboration on influenza research as suspicious.

For example, the accusation that Capua and others set off a human epidemic made no sense because one mild flu case does not constitute an epidemic; moreover, the avian virus she allegedly spread (H7N3) was a different strain than the one that killed the birds in Italy (H7N1). Although the charges were baseless and her innocence among the scientific community was never in doubt, Capua had to learn how to communicate effectively about her case to a broad audience, namely the general public, who is usually without a working knowledge of virology.

Regardless of Capua's plea to be heard by a judge, she had to wait over two years before someone examined her case. The investigation exposed Capua to intense attacks by her political opponents, who did not hesitate to make her a "lame duck" in Parliament. Despite being under great psychological pressure, during her three years in politics, Capua continued to co-chair the Science, Education, and Culture Commission, promoting the discussion of scientific issues and the funding of scientific organizations.

On July 5<sup>th</sup>, 2016, three weeks after leaving Italy with her family, the charges were finally rejected from the court as false and even "fabricated." All the criminal accusations against our prominent flu scientist were dismissed because the evidence for most of the charges was simply "unsubstantial." In other words, the crimes did not happen and there was never a trial. The end of an unnecessary nightmare lasting nearly a thousand nights forever transformed Capua's life and that of all her family. After being completely cleared, Capua resigned as a member of the Chamber of Deputies.

If resilience is a woman's secret weapon, Capua's story serves as a concrete example. In March 2015, Capua received an email from the University of Florida inviting her to consider

coming to direct a new Center of Excellence. After an intense three-day visit at UF, she received a formal offer to direct the center, which was also part of the school's strategic effort to raise UF's profile as a top ten American university." *One Health* connotes a global strategy for expanding interdisciplinary collaboration and communication in all aspects of health for humans, animals and the environment. Her dream. "Well," I asked, "Do you know that I am under criminal investigation in Italy and that the accusations are very serious?" "We do know," they answered. "Nobody believes a single word about it."<sup>12</sup> Thus, on June 20, 2016, Capua became the director of the One Health Center of Excellence for Research and Training at the University of Florida (UF) in Gainesville. After the abuse she experienced, resulting in severe psychologic and physical distress for herself and her family, she has once again shown outstanding leadership: "I am starting over at 50".

This memoir is an arresting story of someone who was able to transform a devastating experience into an opportunity. Moreover, Capua's story is a compelling testimony to the intensity and tireless dedication with which she pursues her work, sometimes at the cost of life itself. However, to balance the conflict between life and work, which anyone committed to scientific discovery must confront, she has found valuable complements. Indeed, the book illuminates the other side of Capua's life, as a mother and a wife, as a daughter and a sister, and also as a friend. Capua colorfully recounts her wedding with Richard, on a perfect rainy day in Scotland, the birth of Mia, her family vacations, her favorite songs, her sunny and gloomy days. Every detail is described with such an immediacy that it is like as the audience can hear her voice.

Aiming at making science more accessible and part of the culture of our times, Capua's book is also a sound example for other scientists about how to communicate to a general audience. The importance of effective communication with the general public is very critical nowadays, especially in a society where, paradoxically, the increasingly democratic dissemination of information, rather than producing an educated public, has instead contributed to widespread mistrust and misunderstanding of scientists and their research.

In the end, Capua's book provides a story that is important, not only for scientists, but for all those who have been attacked on the basis of fake news. Lastly, Capua's book tells a rich and

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<sup>12</sup> Capua (2017): cf. p. 201–202.

compelling human story, full of great anecdotes, quotes and significant life events that make it a great read from beginning to end.