Waking up for others: Bridging the gap in breast cancer clinical research [1]

Submitted by Jacqueline Flores Otero [2] on 5 July 2013 - 12:57pm

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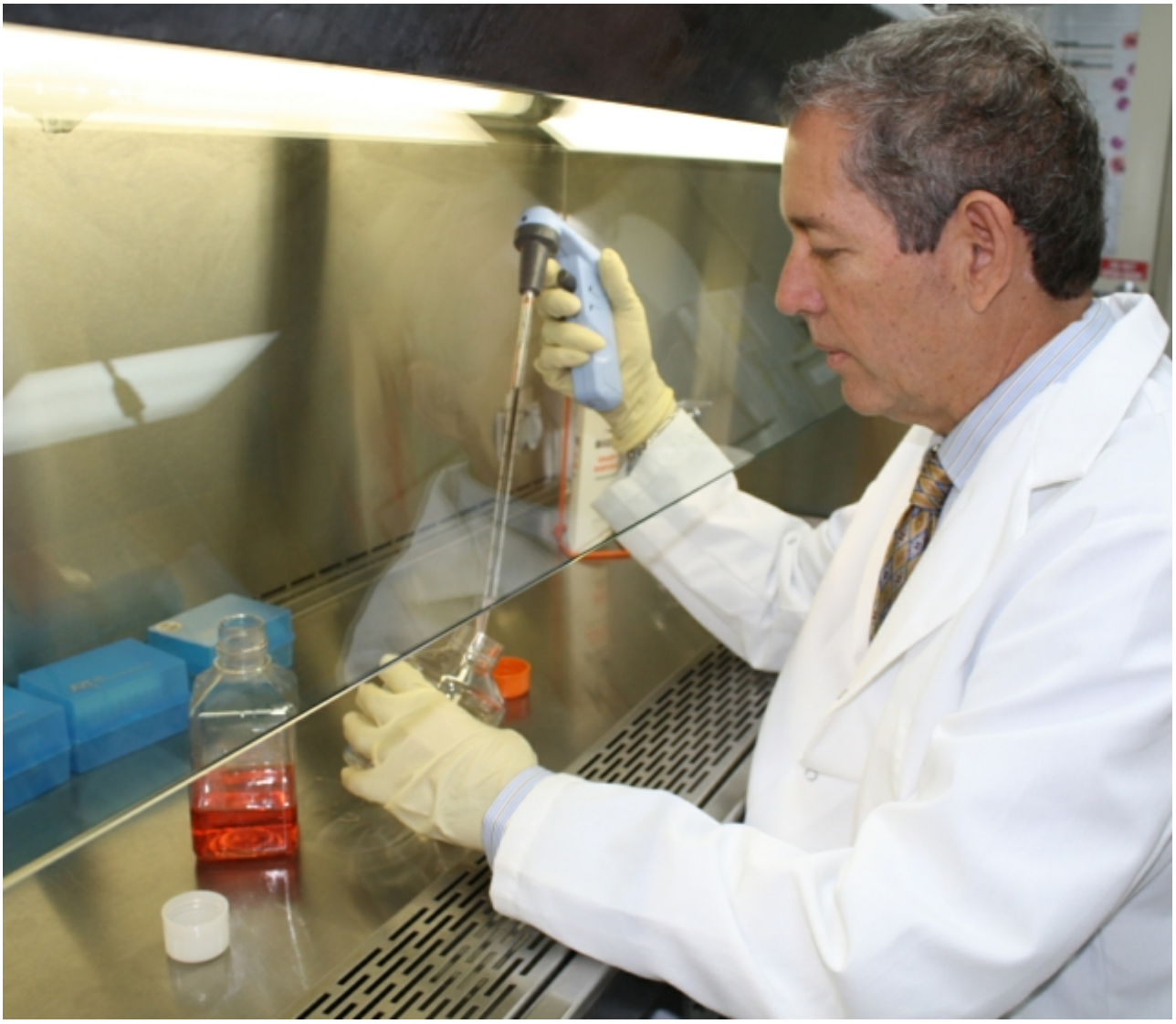

[3]

Dr. Matta performs cancer biology research at Ponce School of Medicine

Portada Dr. Jaime Matta

Waking up for others: Bridging the gap in breast cancer clinical research

For many of us, performing scientific research in our area of interest is the result of the dream we once had; a dream driven by the need of improved diagnostic, prevention and treatment tools for a disease that perhaps a friend or a close relative had. This was the case for **Dr. Jaime Matta** [4], a Professor of clinical cancer research at **Ponce School of Medicine and Health Sciences** [5] **(PSM)** whose mother was diagnosed with terminal cancer in 1997.

Encouraged by his personal encounter with the disease, as well as his own scientific curiosity, Dr. Matta decided to shift his research towards oncology and work in an academic environment that would provide the opportunity to train younger students while setting the foundation for cancer research. When the opportunity to work at PSM presented itself in 1992, Dr. Matta jumped at the chance. Raised in Ponce, Dr. Matta's childhood interaction with the southern countryside and Caribbean sea had first awakened his interest in science. Furthermore, it was through a naturalist mentor from Ponce, with whom he interacted when he was young, that he learned to appreciate biology. When Dr. Matta started as faculty member [6], cancer was an unexplored field at PSM. The lack of a cancer research program gave Dr. Matta the chance to make a difference in his home town. He now had the opportunity to follow his father's advice of "practicing service and helping others regardless of their socioeconomic level" through his cancer research Furthermore, the opportunities to train the next generation of scientists through mentorship in science, networking and interpersonal skills also became a driving force throughout the development of his professional career.

Among the multiple challenges that Dr. Matta faced when recruited as junior faculty, was the fact that at the time there was limited laboratory space and research equipment, and, in contrast with many current programs, there was no mentoring to help junior faculty navigate the transition from being a postdoc to becoming a Principal Investigator. Despite these obstacles, Dr. Matta and a group of faculty members were determined to "make things happen"; they established a thriving basic and clinical cancer research program that in the last 10 years has attracted numerous new research faculty and external collaborators.

An outstanding example of the collaborative efforts that have significantly contributed to the success of the cancer research program at PSM is their NCI-funded **partnership** with the **H. Lee Moffitt Cancer Center** in Florida [7]. The decade long collaborative agreement between these two institutions and NCI allows joint research regarding the causes and effective treatments for cancer in Puerto Rican and Hispanic populations in Florida, establishment of a cancer biobank, community as well as the training of new faculty researchers and clinical oncologists.

With the aim of deciphering the mechanisms that underlie the development and progression of skin and breast cancer, Dr. Matta and his group of scientific colleagues have already improved the life quality of cancer patients through community education and service activities, research, and biobanking of breast cancer (BC) tissues. This is important not only for the almost 1.5 million women [8] that are annually diagnosed with BC worldwide, but also for the 30% of Puerto Rican BC patients seeking to prevent metastasis.

Despite the fact that advances in research and improved diagnostics and treatments have reduced its mortality, BC remains the number one cause of cancer deaths [9] in Puerto Rican women. Thanks to collaborations such as the one between the PSM and Moffitt and to his scientific passion, curiosity, and determination, Dr. Matta has helped make progress in our understanding of BC in Puerto Rican populations.

What Dr. Matta describes as his lab's "biggest scientific achievement" was the discovery in 2004 [10] that the ability of cells to repair their DNA, the molecule that carries our genetic information**,** is a key factor in BC development. DNA damage can result from ultra-violet rays, spontaneous mutations, viruses, certain plant toxins, and by oxygen ions produced by cellular activity (also known as oxidative stress). Dr. Matta discovered that the ability for cells to repair their DNA is 60% lower in Puerto Rican women [11] with BC than in women that lack this disease. More interestingly, Dr. Matta's group discovered that women whose cells show low levels DNA repair have higher odds of developing BC.

Dr. Matta's ongoing studies has so far confirmed that in 1,200 Puerto Rican women with BC there is a strong link between abnormal DNA repair and risk of development of breast cancer. Current collaborative efforts have extended these findings to assess whether problems with DNA repair are due to misregulation of DNA repair genes, epigenetic factors such as gene silencing, the misregulation of miRNAs which help transcribe genes, or due to mutations associated with breast cancer genes, such as the BRCA genes. An additional study published recently by Dr. Matta's group provided information regarding certain factors that modify the risk of BC. They found that the intake of high levels of multivitamins and calcium [12] reduced the odds of having BC by 30% and 50%, respectively. While multivitamins were shown to be a presumptive protective agent against this disease, among all mineral supplements, calcium may be the most effective at reducing breast cancer risk.

The findings from Dr. Matta's group suggest that manipulation of the DNA repair system can serve as a therapeutic target in cancer. In the near future, he foresees other groups testing the hypothesis that the efficacy of anticancer therapy can be improved by transient inhibition of DNA repair, and that dysregulation of this cellular process may be examined as a risk factor for other types of human cancers and diseases.

Beyond his scientific achievements, one of the lessons that Dr. Matta likes to share is the importance of teamwork among the scientific community. Sadly, in science there is sometimes competition for funding resources or the credit of a new discovery. This environment contrasts greatly with the bond that unites the outstanding multidisciplinary group of scientists PSM and Moffitt who recognize that success can be accomplished when researchers join forces to innovate for the benefit of patients. As he describes, *"the days of the lone wolf are over, and we need to develop team projects and team science that will allow us to grow and be of service, even during adverse conditions"*. In addition, he has developed collaborative efforts with other laboratories and researchers in the island and with the epigenetic laboratory of Dr. David Sidransky at Johns Hopkins School of Medicine.

The accomplishments that Dr. Matta has achieved—through research, training and mentoring of students, and the establishment of collaborations of high clinical impact—are a reflection of his devotion towards making a difference in our society. He believes that as important as it is for us

as scientists to persist despite hurdles and work with the goal of serving others, it is also important that together with our educational system, we provide society with health education. By informing women and men about the different habits that they can adopt to develop healthier life styles, they can reduce the risk of life threatening diseases.

"*If we take cancer as an example, and make our small contributions, no matter how few they are, within the context of envisioning better prevention and treatment strategies for our population, our lives take on a very different meaning*" *Matta J.*

For further information of Dr. Matta's research in BC and his partnership with the H. Lee Moffitt Cancer Center in Florida please visit his profile on CienciaPR [13] or the following web pages: http://www.psm.edu/faculty/jaimematta.htm [14] or http://www.mattaresearchlab.com/mainpage [15]

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