Platinum Priority

## Reply from Authors re: M. Pilar Laguna. Are We Ready for Molecular Imaging–Guided Surgery? Eur Urol 2014; 65:965–6

### *Molecular Imaging–Guided Surgery: A New Frontier of Urologic Surgery?*

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In recent decades, significant developments have been made in imaging technologies, including ultrasonography, computed tomography (CT), magnetic resonance imaging, positron emission tomography, and single-photon emission CT, resulting in their currently important role in clinical oncology [1–5]. But when surgery is required, translation of these molecular images to the operative field remains a challenging obstacle.

Based on the actual definition of the Society of Nuclear Medicine and Molecular Imaging, molecular imaging (MI) represents the visualization, characterization, and measurement of biological processes at the molecular and cellular levels in humans and other living systems [6]. MI facilitates personalized patient care, with the potential to reveal the clinical biology of the patient and of the tumor [6]. Moreover, optical imaging techniques have the potential to provide real-time visualization of the tumor during its surgical resection [1]. This is of fundamental importance, especially in urology, where intraoperative assessment of the tumor-free margin is critical for the prognosis of the patient.

Although the advantages resulting from the application of MI to uro-oncologic surgery might be evident, its application in the daily routine is still limited. In her editorial [7], Laguna affirms that it is likely that, for most MI techniques, the evaluation process is not yet mature. This could be the result of encumbrance of the MI-guided surgical techniques in practice and the necessity of fine and accurate registration and integration systems for tracer administration and diffusion. Moreover, MI and optical imaging–guided surgery for the therapy of genitourologic tumors is mostly in the initial stages of research. Important financial investments are required but can reduce implementation in clinical practice and availability in all urologic centers.

Some MI techniques such as photodynamic diagnosis and narrow-band imaging are already used routinely in the diagnosis and therapy of urologic tumors. Investigation of other new MI techniques such as image-fusion technologies and image-augmented navigation is still beginning but should be intensified, considering the tremendous potential for use in medical applications.

To date, we do not have studies with high levels of evidence to assess whether image-guided surgery represents a new frontier for urologic surgery and could become the new gold standard in surgical therapy for genitourinary tumors. Scientific enthusiasm will help pioneer the development of new surgical techniques. As pointed out by Laguna [7], academic institutions have the moral responsibility to support prospective randomized controlled trials to address the efficacy of MI to further improve and optimize diagnosis and surgical treatment for urologic malignancies.

***Conflicts of interest:*** The authors have nothing to disclose.

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