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## microRNA imaging in small animal model using the hNIS and the SPECT/CT modality :toward an imaged-guided microRNAs radiotherapy?

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miRNAs are key players of many biological processes and are considered as new class of pharmacology drugs for diagnostic and therapy. However to fully exploit the potential of miRNAs in the clinic, it is important to monitor their expression pattern using medical imaging modalities. Recently, we developed a method called RILES, for RNAi-Inducible Luciferase Expression System, that allows the monitoring of miRNA expression using bioluminescence equipment. Here we question whether changing the luciferase reporter gene by the human sodium iodide symporter (hNIS) as reporter gene will also permit to monitor expression of miRNAs using nuclear medicine imaging scanner. We provide the evidence that molecular imaging of miRNA expression using the hNIS and SPECT/CT (RINES system for RNAiinducible hNIS Expression system) is feasible but is not as robust as it is when the luciferase reporter gene is used. However under controlled conditions, we were able to monitor the expression of several miRNAs in cells and in the liver and tibialis anterior muscle of mice undergoing muscular experimental atrophy. We are currently exploiting the advantage of the non-invasive nature of the RINES to investigate for a possible link between the loss of miRNA- 23a expression, induction of the apoptosis and the rate of muscle mass degradation. Because the hNIS has a well-established dual application in radionuclide imaging and radiotherapy, our results warrant the use of the RINES for image-guided miRNA radiotherapy with possible application in personalized medicine.

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## International Radiology for Developing Countries: The Delivery of Medical Services to a Honduran Radiologic Scarce Zone

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Short term medical missions have become a popular method in the delivery of health care to developing countries, including Honduras. Populations in remote or underserved settings separated from modern technology bear an increased burden of morbidity and mortality. Recent reports from the World Health Organization estimate that up to 2/3 of the world's population lack access to medical imaging, which suggests that between 3.5 and 4.7 billion individuals worldwide are in radiologic scarce zones (RSZ's). We report our 14-year experience in delivering sustainable health care in a remote RSZ of northwestern Honduras. We describe our practical experience in the establishment of an international medical clinic with imaging services, offer solutions in optimizing infrastructure to the specific needs of the community, and demonstrate how new technologies can offer promising opportunities for overcoming health care access barriers in a resource-poor setting.

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