

LEARNING HORMONE ACTION MECHANISMS WITH BIOINFORMATICS.

João Carlos Sousa, Manuel João Costa, Joana Almeida Palha

Life and Health Sciences Research Institute (ICVS), School of Health Sciences,
University of Minho, Braga, Portugal

The ability to manage the constantly growing information in genetics available on the internet is becoming crucial in biochemical education and medical practice. Therefore, developing students skills in working with bioinformatics tools is a challenge to undergraduate courses in the molecular life sciences. The regulation of gene transcription by hormones and vitamins is a complex topic that influences all body systems. We describe a student centered activity used in a multidisciplinary "Functional Organ System" course on the Endocrine System. By receiving, as teams, a nucleotide sequence of a hormone or vitamin-response element, students navigate through internet databases to find the gene to which it belongs. Subsequently, student's search how the corresponding hormone/vitamin influences the expression of that particular gene and how a dysfunctional interaction might cause disease. This activity, proposed for 4 consecutive years to cohorts of 50-60 students/year enrolled in the 2nd year our undergraduate medical degree, revealed that 90% of the students developed a better understanding of the usefulness of bioinformatics and that 98% intend to use them in the future. Since hormones and vitamins regulate genes of all body organ systems, this web-based activity successfully integrates the whole body physiology of the medical curriculum and can be of relevance to other courses on molecular life sciences.