Institutional Research Theme (IRT) focused on genomics research: advances in high-throughput analysis of microbial, plant and animal genomes, powered in large part by the integration of engineering, biology and computer science, have over the past decade revolutionized the field of genomics and with it, all associated fields of the Life Sciences. Questions that were previously considered intractable to scientific investigation can now be addressed at unprecedented levels of detail and scope. Importantly, "post-genomics" fields such as transcriptomics, proteomics, metabolomics and population genomics have unlocked the biological functions encoded in genomes and are now forming the basis for innovation and application of genomics information in Agriculture and Health Sciences. Universities that embraced these new fields of research early on (e.g. Stanford, MIT, Cambridge) have become global leaders or maintained their international leadership in the Life Sciences. At UP, individual research groups have already embarked on and completed significant genome research projects, including viral, bacterial, fungal and plant genomes. Based on the already established capacity and the tremendous potential for expanding genomics research at UP, we propose the establishment of an Institutional Research Theme (IRT) focused on genomics research. Specifically, we propose the establishment of a Genomics Research Centre (GRC) with strong core capacity for genomics, bioinformatics and computational biology research. We envision a GRC that will be recognized as a Centre of Excellence that makes an important contribution to Health, Veterinary and other Life Sciences in South Africa, Africa and the rest of the world. We propose a strategy for the establishment of the GRC and we demonstrate the return on investment in terms of student training, high impact research outputs and leverage of external funding. The GRC will be a strategic investment ensuring the future competitiveness of UP as a leading research institution.