Content Evaluation and Tool Development for Knowledge Management System

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1. BACKGROUND
- Colorectal cancer/bowel cancer:
  - 2nd most common cancer in Ireland.
  - Linked to accumulation of multiple genetic & epigenetic changes.
- Epigenetic changes:
  - Additional regulatory layer on top of (but not connected to) genetic information stored in DNA sequence.
  - Reversible and heritable.
- We are working on:
  - Knowledge Management system (see below) to explore the role of genetic and epigenetic factors in human cancers.

2. CRC: WHO ARE AT RISK?
- Consumers of high fat, low fibre diet.
- Overweight and obese individuals.
- Individuals with:
  - Previous occurrence of bowel cancer.
  - Immediate family member with a history of bowel cancer or FAP or HNPCC.
  - A history of bowel conditions like ulcerative colitis or Crohn’s disease.

3. WHAT DOES KMS DO?
- Additionally, provides access to annotated information through a query, data visualisation and integration interface.
- Provides statistically analyzed output for different stages of colon cancer as per the query.
- URL for webportal: http://statepigen.sci-sym.dcu.ie

4. WHY IS KMS IMPORTANT?
- It elucidates the underlying mechanisms of genetic and epigenetic alterations in human cancers.
- It explores prospects for novel early diagnostic tools and therapeutic interventions.
- Enhances knowledge sharing in scientific community.

5. OUR AIMS
(a) Augmentation, Analysis and Upgrade of KMS/Biomedical Resource (As shown above)
(b) Evolutionary Analysis to answer if human and mouse colon cancer genes still similar-functionally (As per below)

6. WHERE ARE WE AT NOW?
- In addition to above, we are currently looking at new possibilities for upgrade of KMS.
- A survey of complementary resources is completed as well (A Paper is to be published soon).
- For the study on whether mouse and human genes are still similar functionally, we found that some genes are not (Details on BMC Evol. Biology paper).

7. FUTURE WORKS
- A new approach / pipeline for integrating more data to the system is to be devised for overall system upgrade.
- There are many other possibilities for linking our KMS to other similar resources – which are being looked at.
- Extend the work to other cancer types as well.

**GLOSSARY**
BR – Biomedical Resource
KMS – Knowledge Management System
FAP – Familial Adenomatous Polyposis
HNPCC – Hereditary Non-Polyposis Colonic Cancer

This material is based upon works supported by Dublin City University under the Daniel O’Hare Research Scholarship scheme.