A Textual Analysis of Stakeholder Perceptions of Genomic Editing Technology

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Background

- CRISPR-Cas9 (CRISPR) has the potential to contribute significant improvements to agriculture and food security
- Recent history involving genetically modified organisms (GMOs) shows that public attitudes toward emergent scientific issues can lead to rejection of a particular agricultural technology
- Social representations are attitudes and beliefs that play a role in the development of knowledge and attitudes towards techno-scientific innovation (Bauer & Gaskell, 2008)

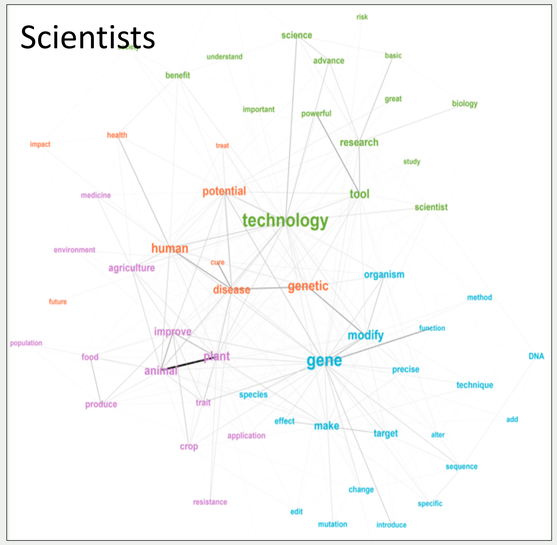
Research Questions

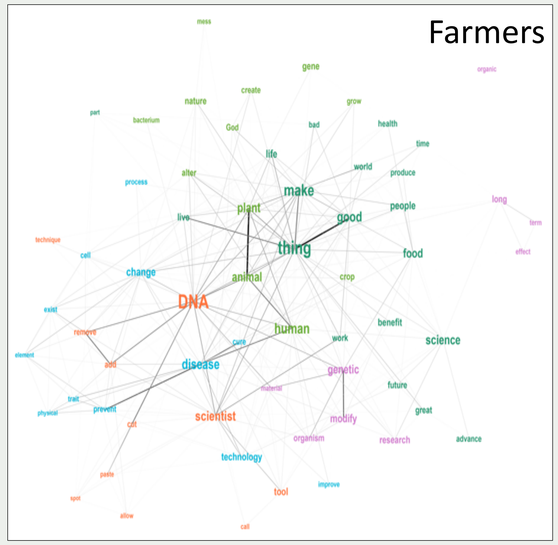
- What are the perceptions and knowledge about CRISPR held by the four stakeholder groups?
- Do respondents focus on risks and/or benefits?
- How do these perceptions and areas of focus differ across stakeholder groups?

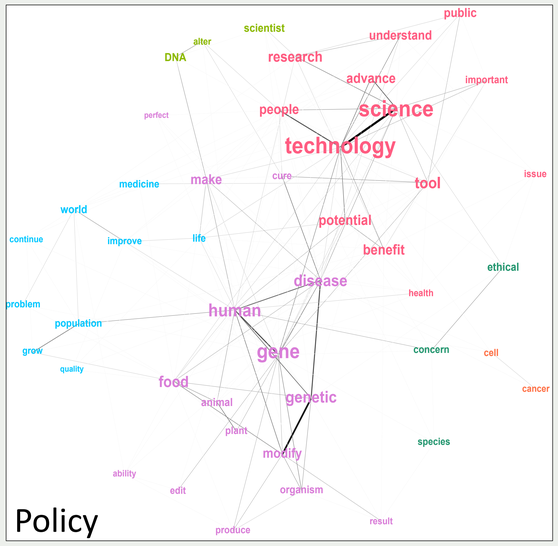
Methods

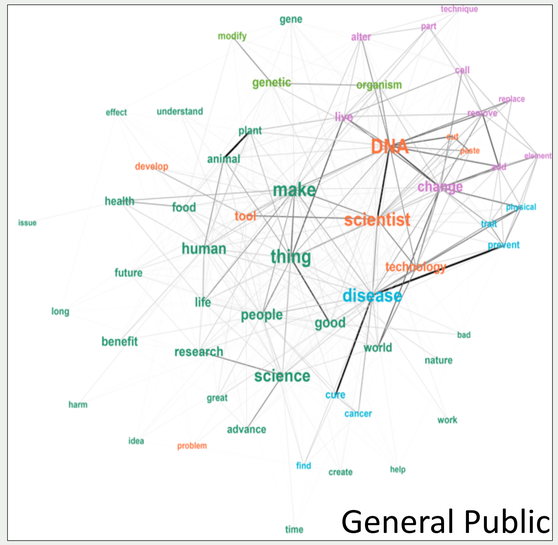
- Collected open-ended essay responses via Qualtrics soliciting opinions pairwise to genomic editing
- Semantic network analysis (SNA) on essay content, using word frequency and co-occurrence to reveal meaning.
- Community detection to reveal distinct themes within each group's semantic network
- Text keyness to determine differences in important terms pairwise between groups

Semantic Network Analysis

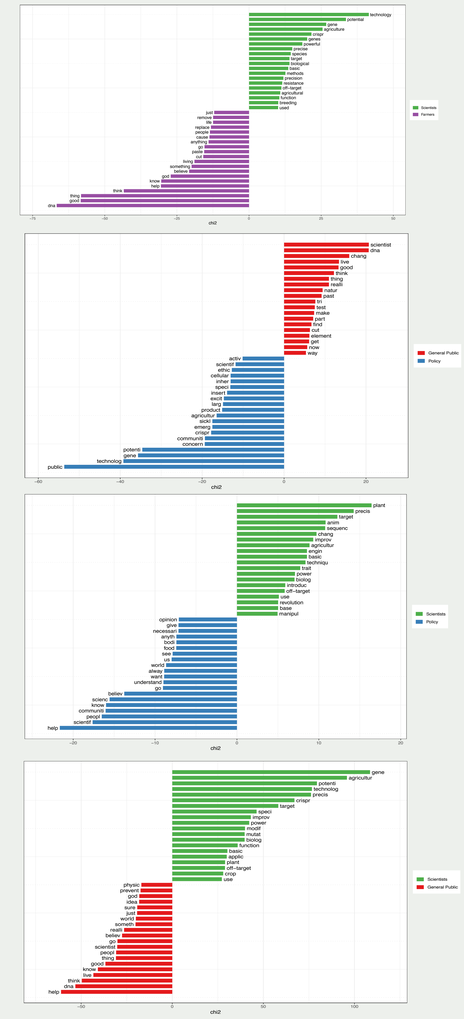








Keyness Comparisons



Conclusions

The multiple stakeholder groups displayed differently constructed perceptions of CRISPR. The general public (potential CRISPR product consumers) exhibited a low level of sophistication but positive orientation toward CRISPR, echoing early studies of GMOs (Fink & Rodemeyer, 2007). Policy workers also exhibited a relatively high level of technical sophistication while emphasizing the potential societal benefits. Farmers used a relatively low level of scientific terminology while emphasizing the potential agricultural benefits. scientists utilize a high level of technical scientific terminology emphasize the precision and potential utility of the technology. Heavy reliance by the general public on prompt words and low incidence of valenced language suggests the absence of firmly formed attitudes towards genomic editing at this time, suggesting an openness to a presentation of new information about the technology and an opportunity for engagement.

Thanks to: UCDAVIS Innovative Genomics Institute