A youth-driven "Kids Nutrigenomics" outreach education project

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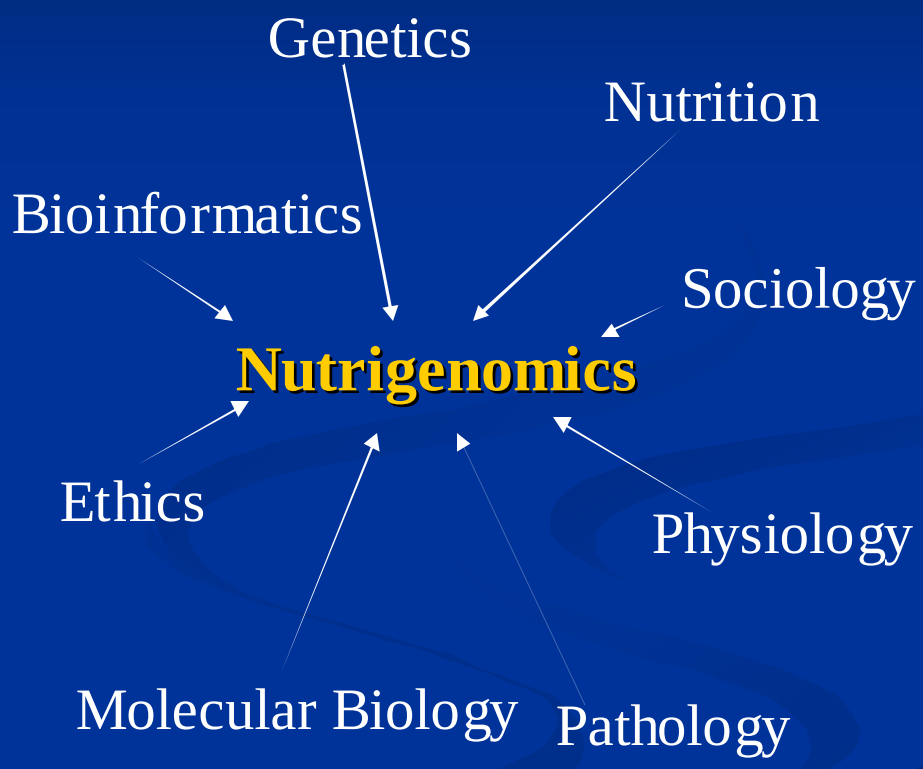
Today's presentation

- Describe the development process, including the evaluation, of the Kids' Nutrigenomics outreach education project

What is nutritional genomics?

- A multidisciplinary science.
- Interplay between health, food and genomics
- Helps to understand the interaction between the genes with diet-nutrition, and prevention and treatment of chronic disease.



http://nutrigenomics.ucdavis.edu

Project Goal

- To educate youth about the fundamentals of nutritional genomics via interactive, computer-mediated technology

Objectives (focused on youth)

- Introduce the topic of nutritional genomics
- Increase knowledge of genetics and nutrition
- Increase knowledge of nutrition as more than what a person eats
- Increase critical thinking skills

Specific Aims of "NG for Kids" Project

- Develop content to represent nutritional genomics
- Develop characters, graphics to illustrate the basic tenets or principles
- Field test prototype, originally web-based
- Develop modules based on evaluation and feedback from target audience
- Produce an educational program with and for youth for informal education

History of the project

- 2004 initiated as website project UC Davis NCMHD, UC Berkeley Undergrad Research Program, Community Outreach Core
- 2005-2006 website based project work adapted to a standalone module based on process and formative evaluation
- 2006-2007 creation, development and evaluation processes continue, with end product of module with 3 vignettes, DNA, Diabetes and HCA

Methods

Undergraduate research apprentices (n=10) participated in all aspects of the project from script writing to development of graphics to Flash programming

Other youth were involved in other aspects
- middle school youth
- high school biology students
- children at local hospital's school
- health museum attendees
- youth center staff and students (voice overs)

Methods

Evaluation included:

- Formative evaluation
- Process evaluation
- Observational evaluation

Modification and editing were continuous for the duration of the project

Five tenets ➡ Four fundamentals

Five Tenets

1) Improper diets are risk factors for diseases
2) Dietary chemicals alter gene expression and/or genome structure
3) Influence of diet on health depends upon an individual's genetic makeup
4) Genes regulated by diet play a role in chronic diseases
5) "Individualized nutrition" – diets based upon genotype, nutritional requirements and status – prevents and mitigates chronic disease.

Four Fundamentals

1) Everyone's genes react differently to food.
2) Eat well today; be healthier tomorrow!
3) Don't choose foods that make your genes mad!
4) Choose a diet that is just right for you!

Kaput and Rodriguez. Nutritional Genomics: the next frontier in the postgenomic era. Physiol Genomics. 16: 166-177. 2004.

The Nutrigenomics for Kids Module

- Based on original scripts and concepts of the Nutrigenomics Kids Website Project
- Conducted on going evaluation during process
- Redesign of graphics, addition of music

Methods

- Six 1 hour quasi-focus groups in 4 urban, and 1 semi-rural locations in Northern California
- 2003- 2004
- 45 participants, mean age: 12, 73% were African American and Latino/Mexican Americans

Methods

Three focus groups 2005-2006 in Northern California middle schools (28 youth total: 36% African American, 29% Hispanic, 11% Asian American, 11% white)

Methods

Observational evaluation and surveys conducted in Children's Hall of Health Museum and Children's Hospital School (2006)

Methods

Discussion and topic areas for groups and observation

- computer and internet use
- website preferences
- perception on health websites
- personal descriptions of *nutrition* and *genetics*,
- graphics preferences
- time spent viewing module
- understanding of information presented

Results

Focus groups included 61 participants, mean age: 12, 73% were African American and Latino/Mexican Americans.

Survey and observational evaluation included 36 youth, grades 1 to 5, 31% Asian American, 33% Latino, 17% African American, 14% White.

Results

- Youth will not go to a “site” for the sake of education
- General knowledge on genetics and nutrition is poor
- Attraction to site is dependent on interactivity and visual appeal
- Best way to teach is through games and quizzes
- HTML prototype (original web-based) was too informational, needed more animation, interactivity, and quizzes

Results

- Portions of stories were moving too fast for reading speed of youth
- Some portions were too slow to keep youths engaged
- Need to incorporate more:
  - Animation/graphical interactivity
  - Sound
  - Graphics
- Content was interesting and educational

Conclusion

- Limitations of an educational website.
- Potentials for being a “fun stop”
- Development of games and puzzles
- Incorporation into curriculum: investigate science standards of middle schools
- Youths must be involved throughout the process, at all stages as the “experts”

Development: Collaborative Effort

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- Castlemont High School, Youth Uprising
- Hall of Health Museum, Childrens Hospital Oakland School