



Northwestern University Feinberg School of Medicine



Genomic Literacy

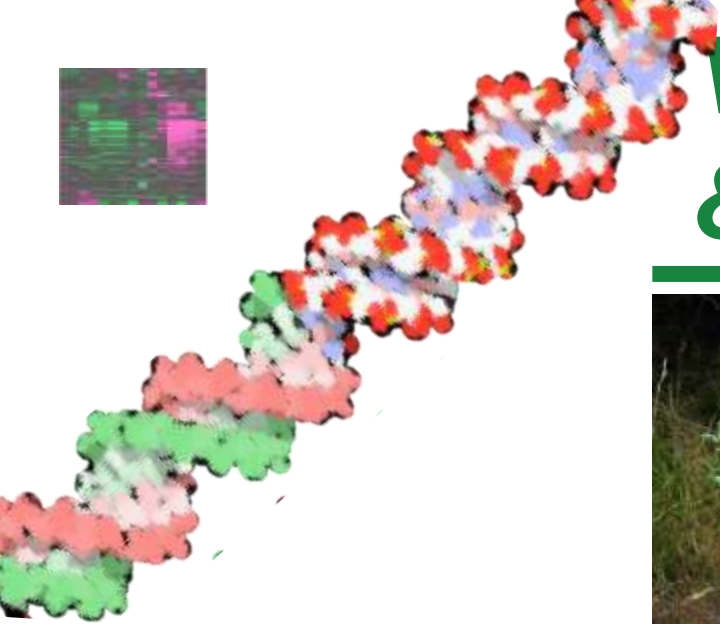
How Much is Enough?

(and how can the library help?)

Pamela Shaw – Biosciences & Bioinformatics Librarian
Galter Health Sciences Library

May 21, 2012 – AAAS Science Translational Medicine panel:
**Genomic Medicine, Personalized Genomics, and Genomic Literacy:
Contributions from Health Science Libraries**

Veterinarians & their Clients



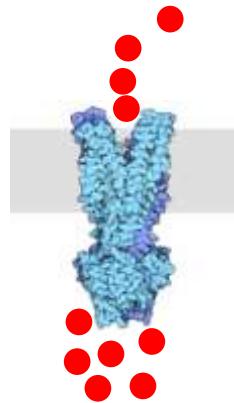
Dogs-wallpapers.com

“White feet”

“Don’t treat”



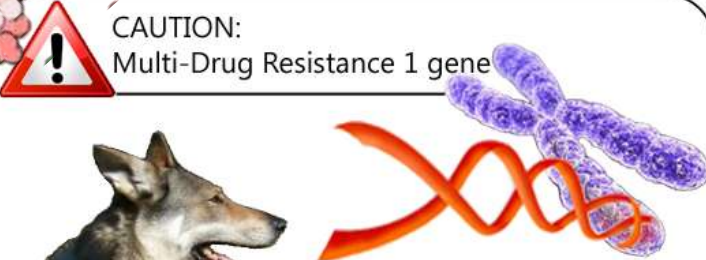
MDR1 p-gp




- Schinkel AH, Smit JJ, van Tellingen O, Beijnen JH, Wagenaar E, van Deemter L, et al. Disruption of the mouse *mdr1a* P-glycoprotein gene leads to a deficiency in the blood-brain barrier and to increased sensitivity to drugs. *Cell*. 1994;77(4):491-502. PMID: [7910522](#).
- Mealey KL, Bentjen SA, Gay JM, Cantor GH. Ivermectin sensitivity in collies is associated with a deletion mutation of the *mdr1* gene. *Pharmacogenetics*. 2001;11(8):727-33 PMID: [11692082](#).
- Dowling P. [Pharmacogenetics: it's not just about ivermectin in collies](#). *Can Vet J*. 2006;47(12):1165-8. PMID: 17217086; PubMed Central PMCID: [PMC1636591](#).

The Educated Consumer

www.busteralert.org



CAUTION:
Multi-Drug Resistance 1 gene

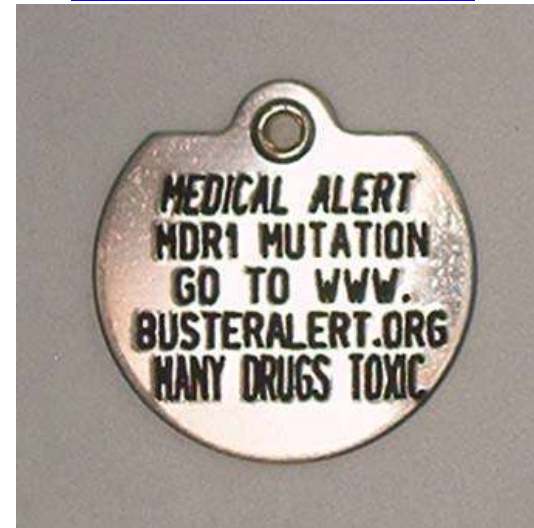


A genetic mutation can make my dog sensitive to certain drugs.
Particularly:

- Antiparasitic from the Avermectin family
- Antidiarrheal based on Loperamide
- Anesthetic

This sensitivity CAN KILL my dog

www.inugami.ca

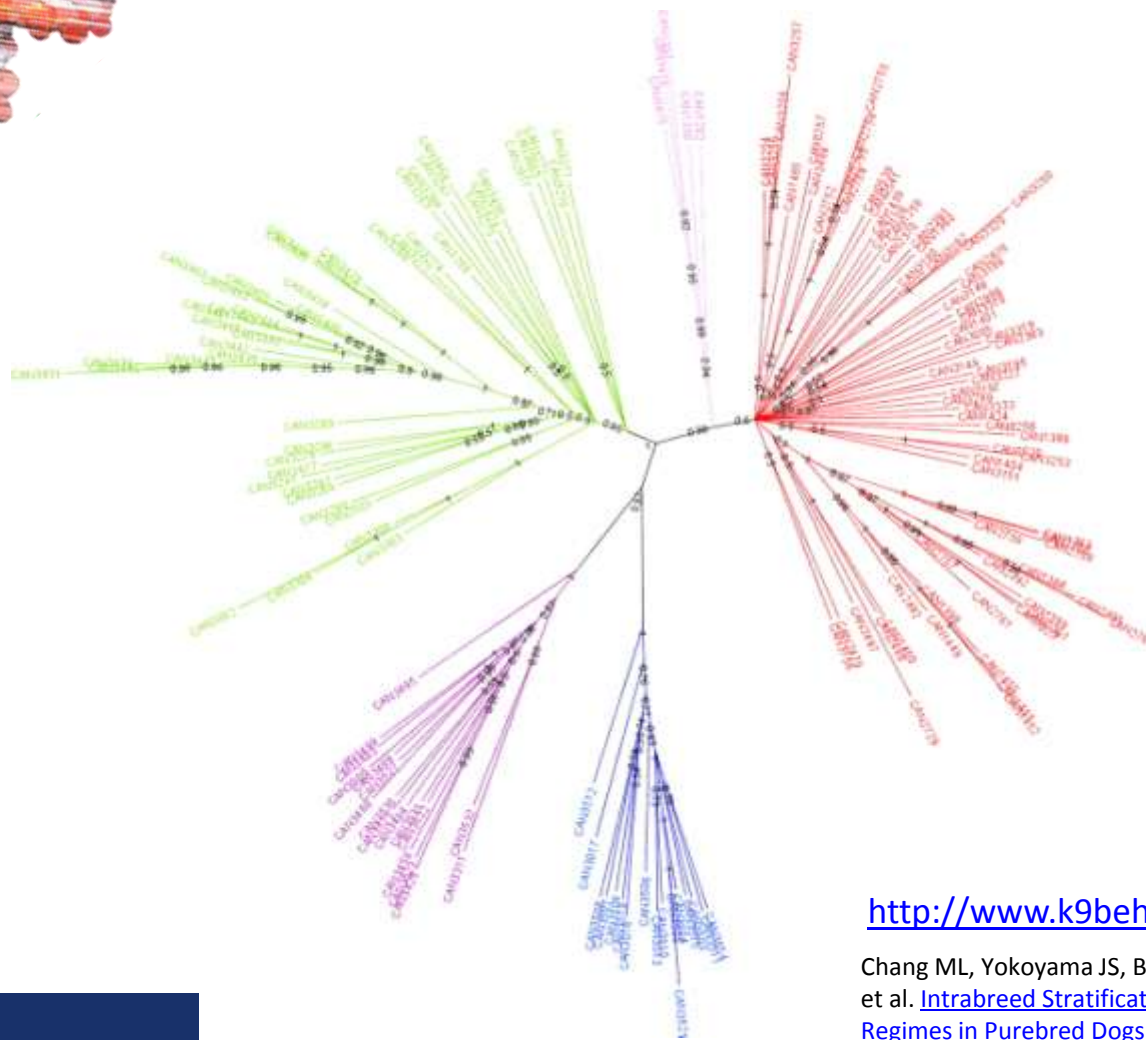


Information found on

- Breed-specific websites
- Consumer animal health websites
 - http://www.offa.org/dna_alltest.html
- Veterinary hospital websites

An informed consumer can alert the practitioner

Beyond Pharmacogenomics



<http://www.k9behavioralgenetics.com/>

Chang ML, Yokoyama JS, Branson N, Dyer DJ, Hitte C, Overall KL, et al. [Intrabreed Stratification Related to Divergent Selection Regimes in Purebred Dogs May Affect the Interpretation of Genetic Association Studies](#). *J Hered.* 2009;100:S28-S36.



Physicians

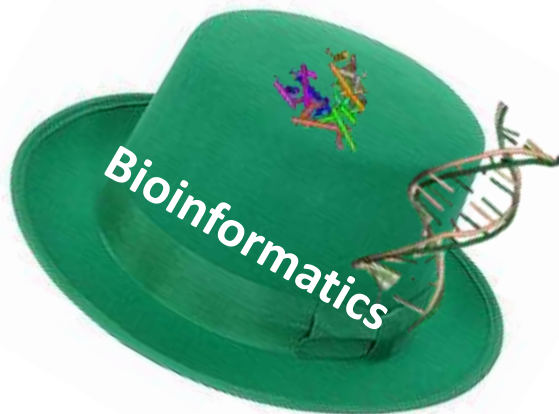
NUCATS
Clinical and Translational Sciences Institute

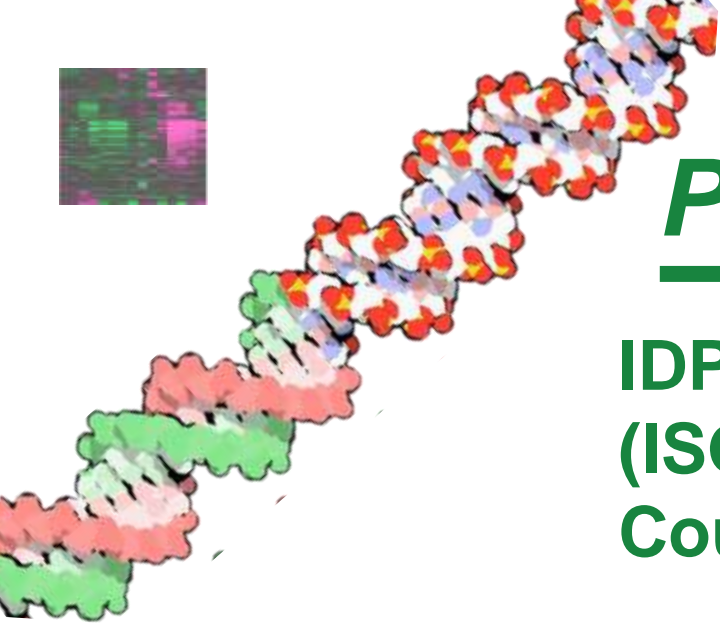
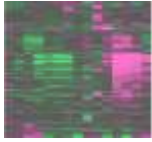
CTSA MSCI physician researchers

- What's a biomarker?
- How do I make sense of GWAS studies and their gene lists?

Resources

- Pathway analysis products
 - How to interpret large gene sets
- [Gene Ontology](#)
- [OMIM](#), [GeneReviews](#)
 - [NHGRI \(genome.gov\)](http://www.genome.gov)
- [Genetic Testing Registry \(GTR\)](#)





Physicians

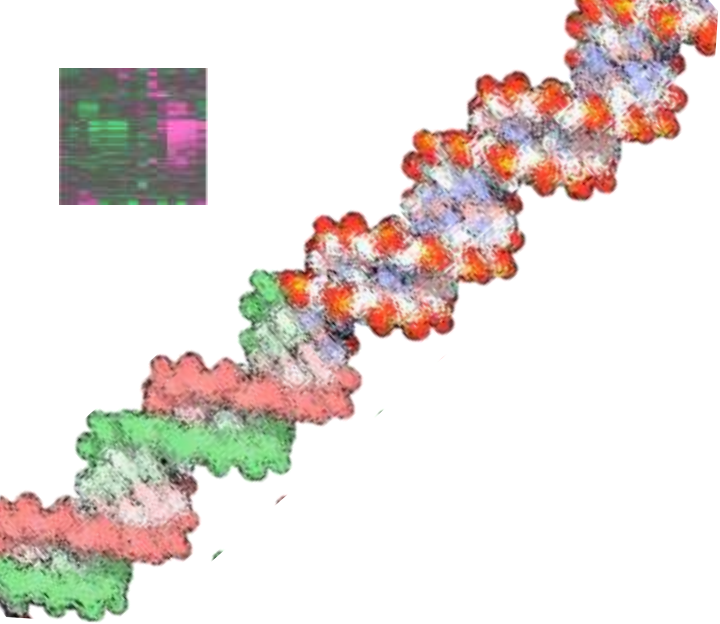
IDPH / Illinois State Genetics Plan (ISGP) grant with Genetic Counseling

Literature Searches

- Genomic competency in health personnel
- Medical genetics/education
- Genetics knowledge and attitudes

Result:





State of Illinois
Rod R. Blagojevich, Governor
Department of Public Health
Eric E. Whitaker, M.D., M.P.H., Director



Illinois State Genetics Plan

2007

www.idph.state.il.us/HealthWellness/Genetics_07StatePlan.pdf

[IDPH Genetics website](http://www.idph.state.il.us/HealthWellness/Genetics)

State of Illinois
Rod R. Blagojevich, Governor
Department of Public Health
Eric E. Whitaker, M.D., M.P.H., Director



ILLINOIS STATE GENETIC SERVICES PLAN 2007



Illinois Department of
**PUBLIC
HEALTH**

www.idph.state.il.us/HealthWellness/GeneticServicesPlan.pdf




Basic Science Researchers

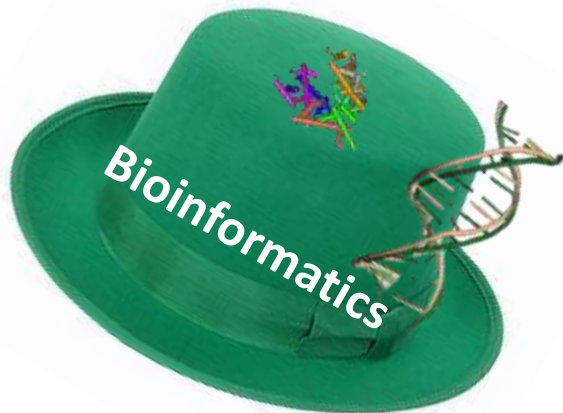
Whole genome sequencing is now cheaper than GWAS SNP arrays

- Referral to the Biomedical Informatics Core
-

I have all this SNP array data-what do I do with it?

- Pathway analysis products
 - How to interpret large gene sets

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- Data deposit assistance services
- Collaboration with NUBIC on experimental design consultations

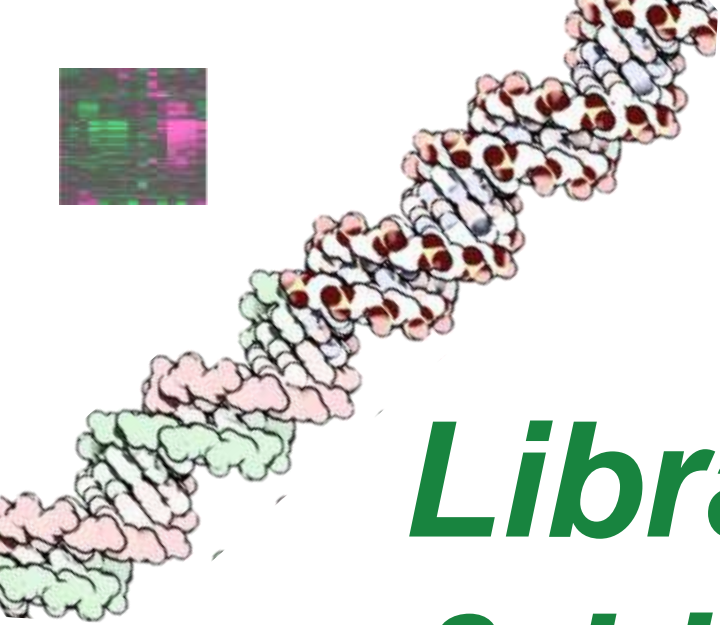


Do the questions drive the data, or vice versa?



For the NU Community

- Collaboration with NUBIC, Division of Health & Biomedical Informatics, Genetics and Genomics Education Cluster on a series of Genomic Medicine peer-to-peer seminars (Thanks for the ideas, Kristi Holmes!)
- Pathway analysis peer-to-peer training “summits”



Librarians & Libraries

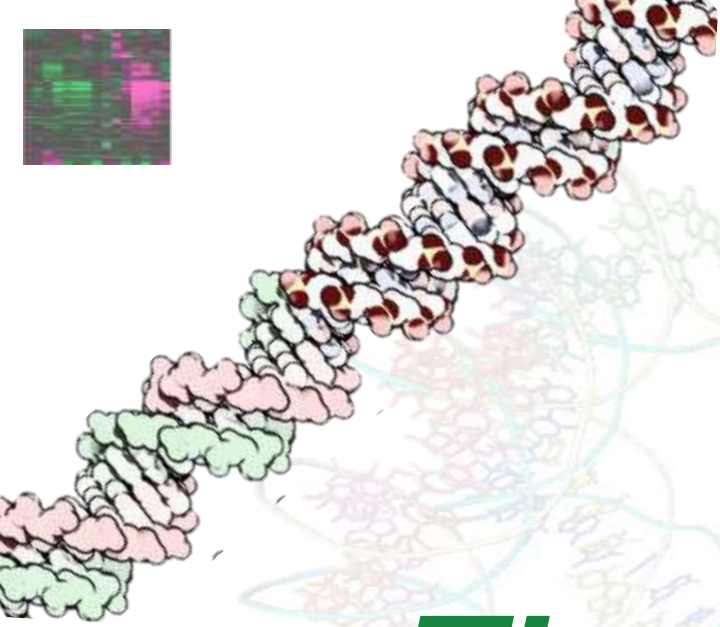


Librarians' genomic literacy

- Special education not always required
 - Learn what types of resources are appropriate for all levels of knowledge
 - Public, clinician, basic scientist, grad or undergrad or medical student
 - Library staff with genomic/molecular backgrounds
 - Can provide valuable consultation and education for clinicians and researchers, easing the burden on the bioinformatics facility and saving the researchers money
-



Learn from your library peers



Thank you!

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