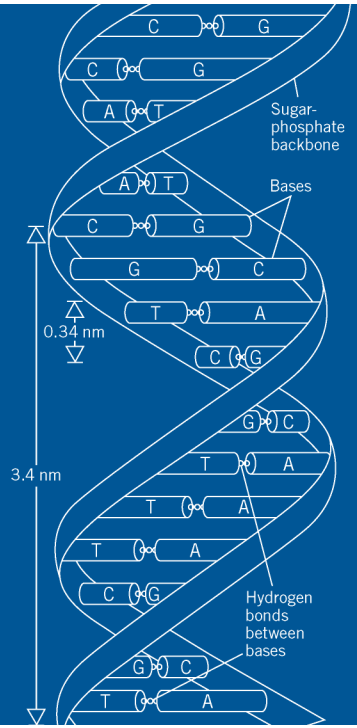

Data Mining the Clinical Ecosystem

Joshua Haznedar
gRED - Development Sciences

PhUSE SDE San Francisco
September 26, 2014

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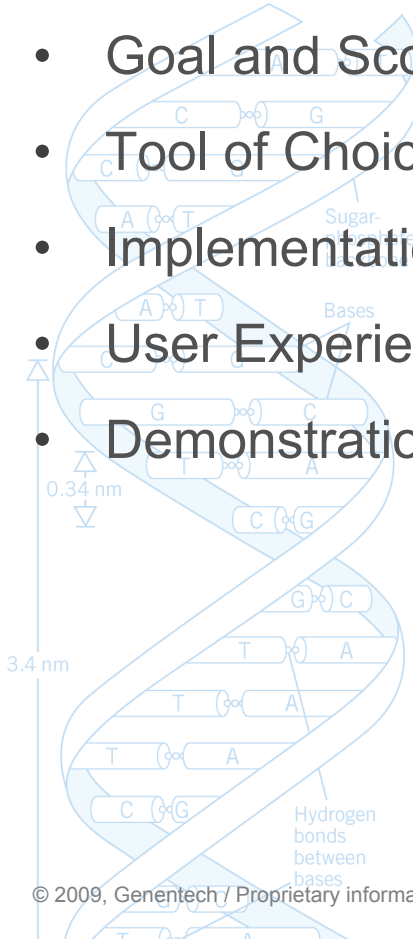
Presentation Outline

- Challenges
- General Overview of Data Flow & Data Types
- Goal and Scope
- Tool of Choice
- Implementation of Dashboards
- User Experience
- Demonstration of Dashboards



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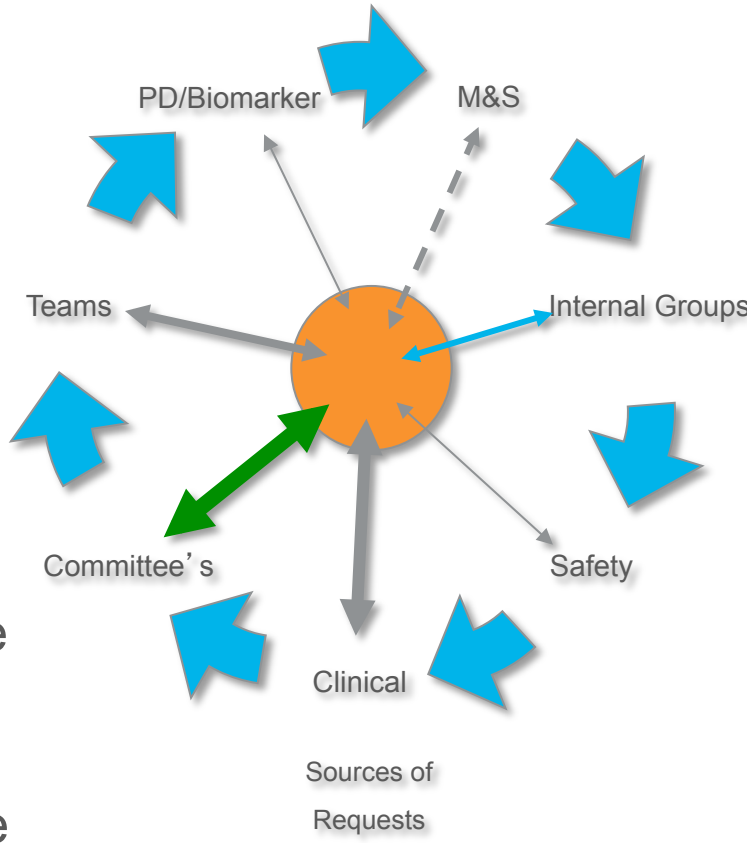
Challenges
Data Retrieval, Data Analysis & Review

- Sources of requests related to data and data analysis varies and increases as the project matures
- Priorities for requests vary as well, but in general are urgent in nature
- Diverse data sources with non-standard formats and structures
- Difficult to interactively review and analyze the data
- Steps and processes taken for one project are not transferable to other projects



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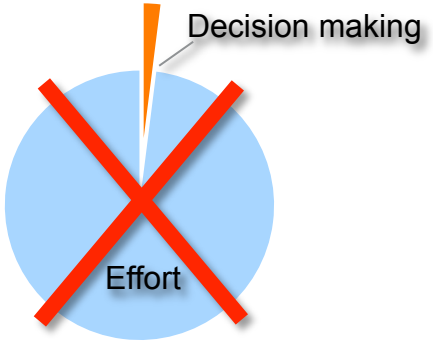
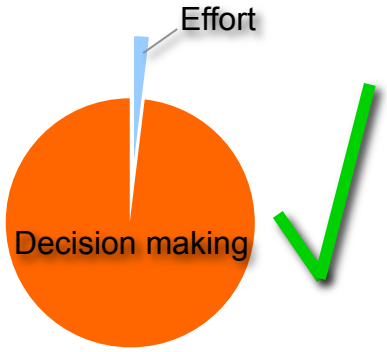
Challenges Cont.
Data Retrieval, Data Analysis & Review

- A byproduct of using different systems/tools and non-standardized business process leads to data that is not consistent and is not easily accessible
- Pooling data is challenging and resource intensive
- Leads to inefficient data analysis
- Decrease in data quality – crucial in decisions driven by data





The Preferred Model

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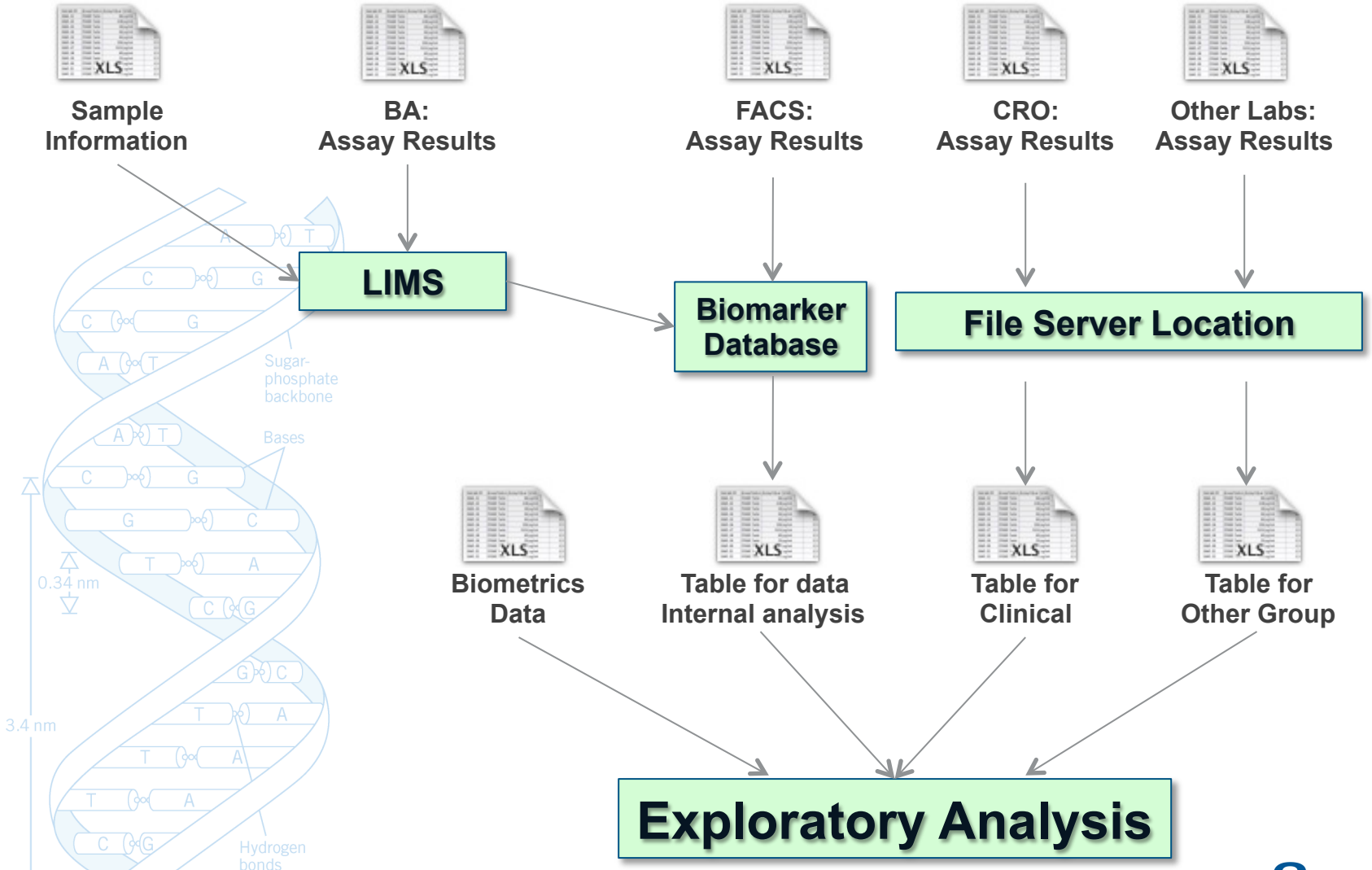
Sources of Data
General Overview of Data Flow & Data Types



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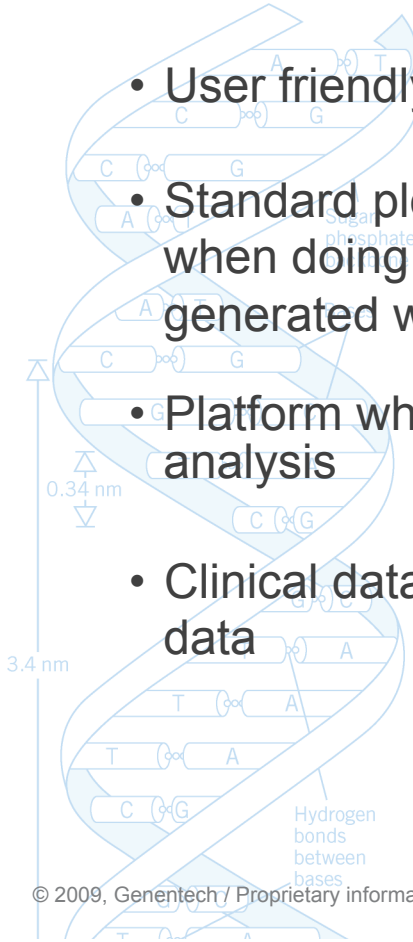
Goal and Scope

- Ability to easily aggregate complex data sets across multiple data sources using simple and efficient consistent business process
- Interactive data review tool(s) for detecting trends/signals for decision making
- User friendly interface to allow non-R users to easily modify R plots
- Standard plotting and analysis platform to empower users to be self sufficient when doing exploratory analysis of biomarker data, including complex plots generated with advanced tools
- Platform which would allow data pooling, data mining capabilities and statistical analysis
- Clinical data and other data (e.g. demographic) required to interpret biomarker data

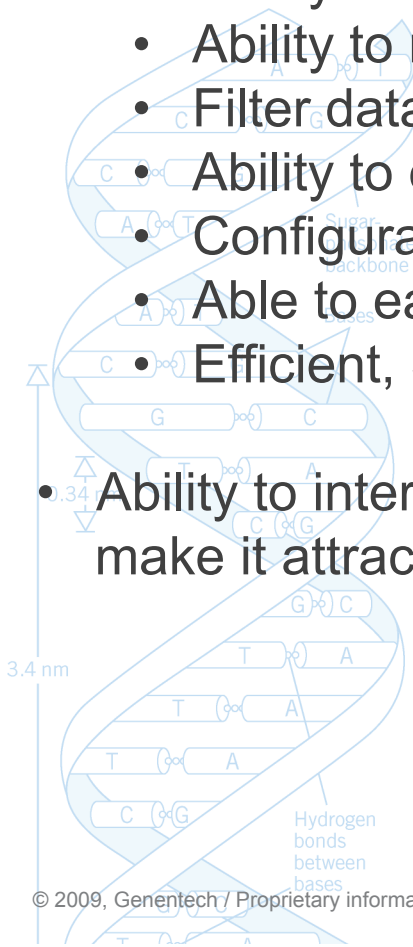


Spotfire as the tool of choice for exploratory data analysis

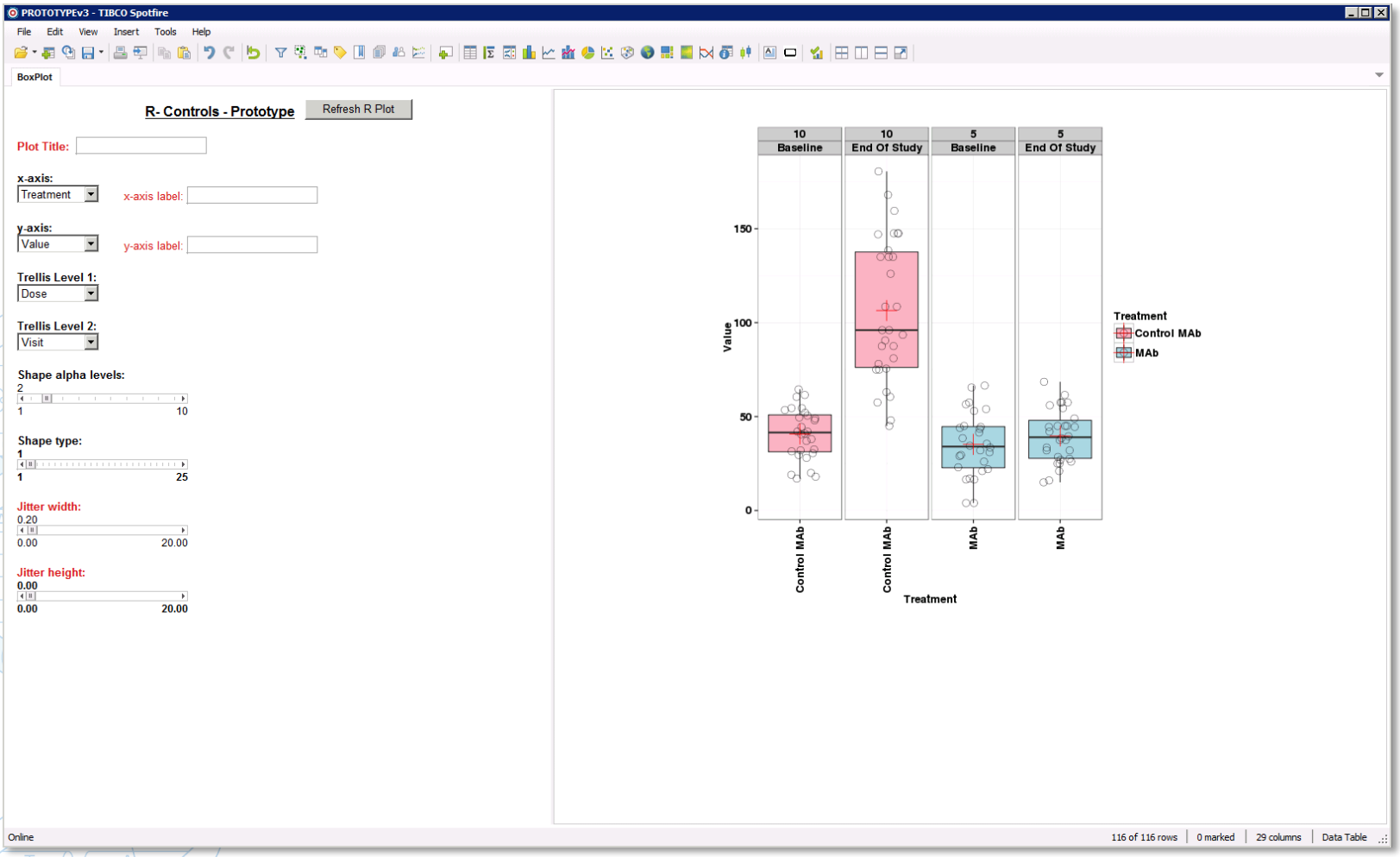
Why Spotfire?

- Interactive analytic interface
- Ability to analyze multiple data sets
- Ability to roll-up and aggregate data values on the fly or be able to
- Filter data to drill into the smallest details
- Ability to export tables, plots into .doc, .ppt, .xls, .txt etc.
- Configurable visuals such as bar charts, line chart, pie charts...etc.
- Able to easily export data tables and plots to other platform or software
- Efficient, Simple & Quick

- Ability to interface Spotfire with advanced analytics tools such as R and S+ make it attractive



Implementation of exploratory analysis dashboards



Integrated R plots and custom user interface for simple and efficient ways to update R plots by non-R users

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Implementation of exploratory analysis dashboards cont.

Percent change from baseline dashboard, allowing users to select values for baseline calculation via the custom controls

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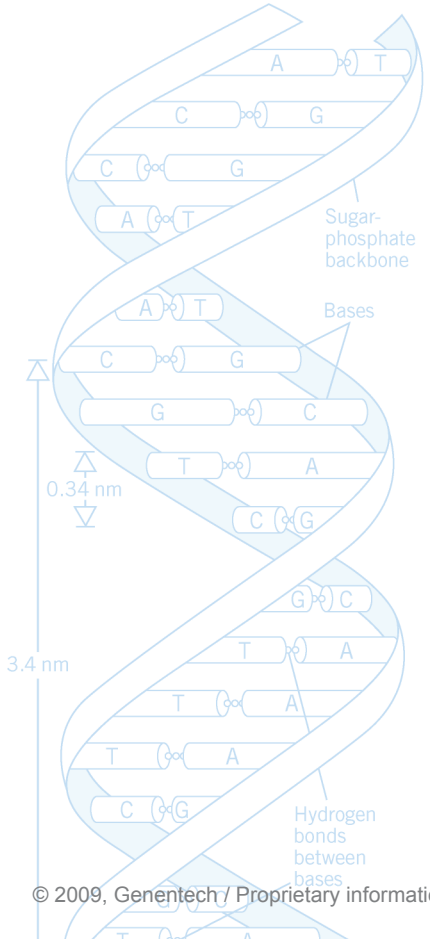
User Experience: Significant time savings using Spotfire in hypothesis generation

Project	Benefit & User Feedback	Current Tools	Spotfire
Project X	Plotting and analyzing various/multiple biomarker data.	2 weeks	1 day
	Spotfire helps us understand our data more quickly and come up with specific hypotheses to test in additional datasets.	1 month	1 week
	Ability to compare multiple biomarkers in a single useful plot.	1 day	1 hour
Project Y	Plotting and analyzing over 100 biomarkers using a pre-designed template including analysis of absolute values as well as change of baseline.	1 month	2 weeks
	Using Spotfire to present to various teams helped drive focused discussions with Biostats.	Multiple Meetings	1 meeting
	Identify relationship between different biomarkers as well as between PD and PK.	1 week	1 day
	Seamlessly analyze data per patient subsets	hours	minutes
Project Z	Analyzing and comparing different exploratory biomarkers	1 week	1 day
	Identify relationship between different biomarkers as well as between PD and PK	days	hours

Acknowledgments

ITGR/OMNI Biomarker Development

- Lee Honigberg
- Ashley Smith
- ITGR/OMNI-BD Staff



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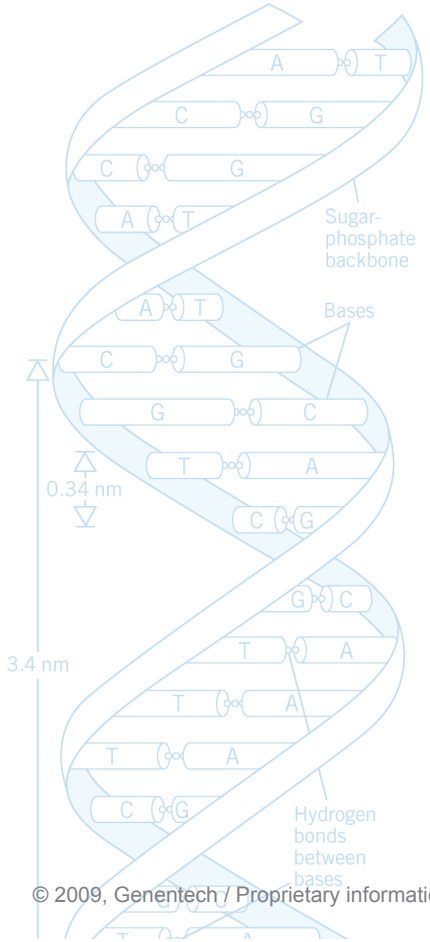
Demonstration



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