



Genetic Identity and Community

DTC Genetic Testing Workshop
The National Academies'
August 31 - September 1, 2009



the power
of DNA:

*Discovering Lost and
Hidden Relationships*

How DNA analysis techniques are assisting
in the great search for our ancestors

The Sorenson Molecular Genealogy Foundation (SMGF)



The Mission of the SMGF

- To change the way that we think about each other, and hopefully the way we act towards each other, by showing that we are really one great human family

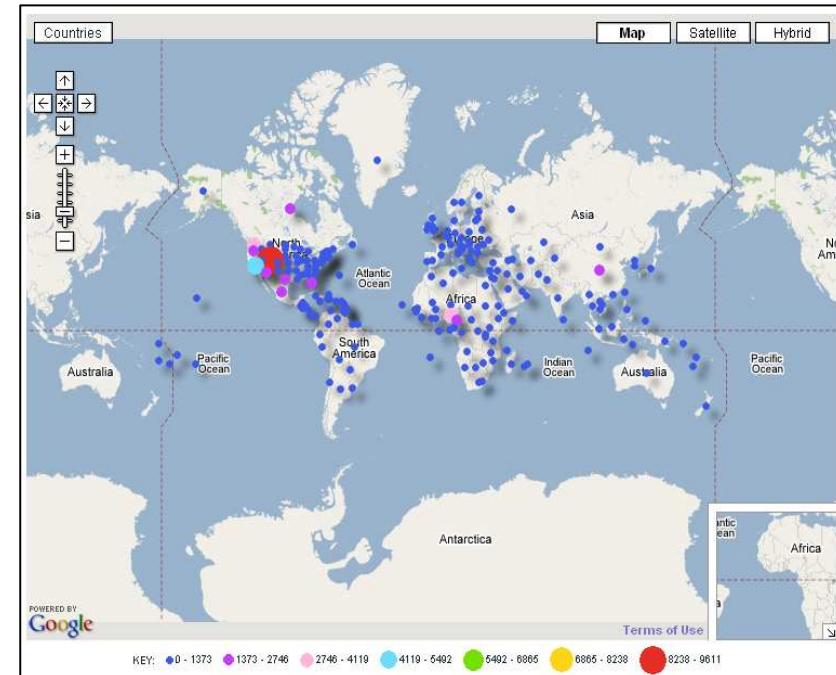


James L. Sorenson

- By creating a comprehensive database of the families of the world, using correlated genealogical and genetic information
- And providing the tools needed to reconstruct genealogies using DNA
- Make the data available to the public

SMGF Database

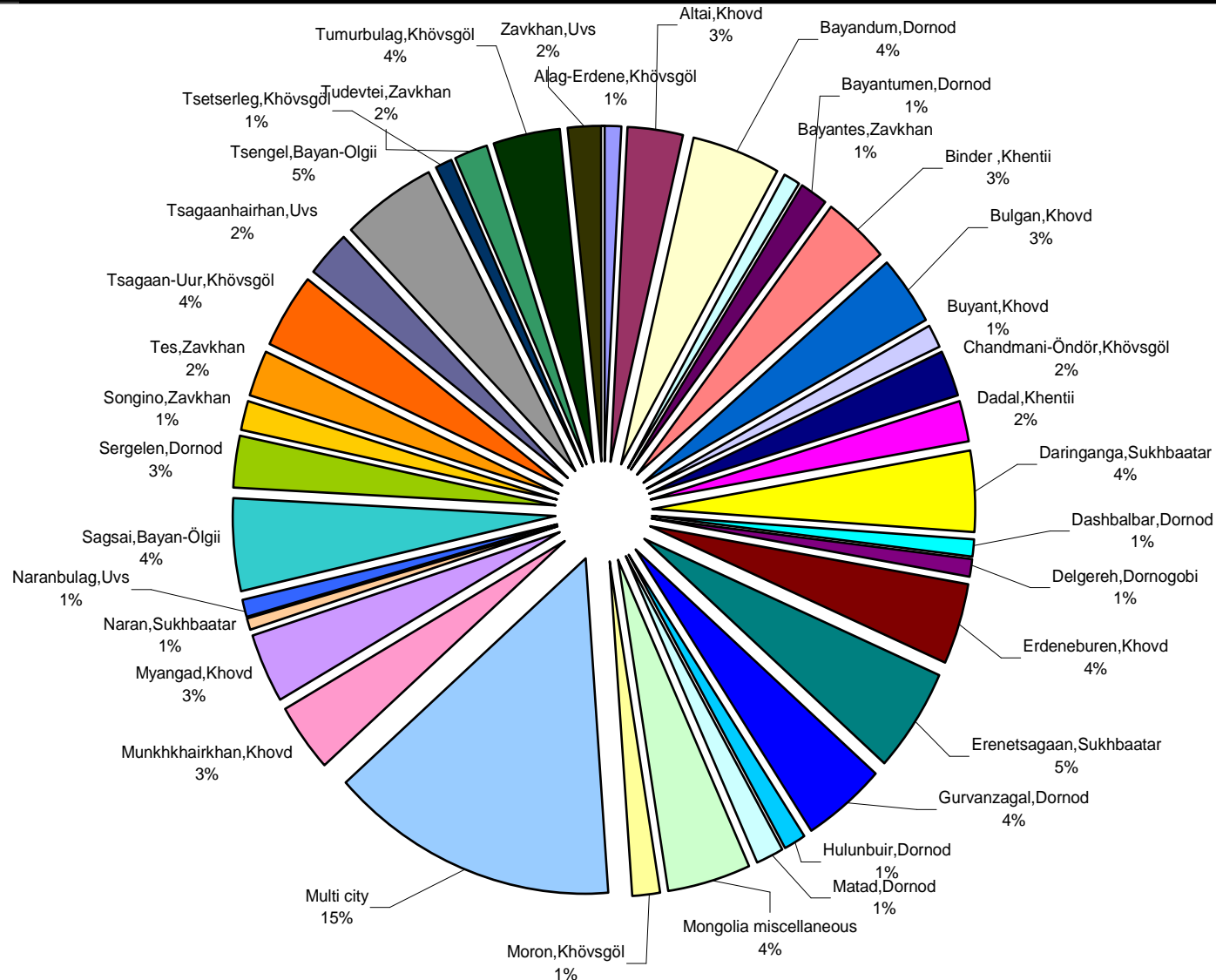
- **DNA Samples**
 - 108,000 (informed consent)
 - ~170 countries
- **Extended Pedigrees**
 - 90,828 (11 gens average)
 - 7.8 m names (2.6 m unique)
- **mtDNA sequences**
 - 76,766 D-loop
 - 315 Complete
- **Y haplotypes**
 - 39,264 STR (complete at 37 loci)
- **X haplotypes**
 - 73,394 STR (complete at 13 loci, 3 linkage groups)
- **Autosomal genotypes**
 - 78,568 STR (68.5 average)
 - 300 SNP (Affymetrics 6.0)



Collection in Mongolia



Sample Collection Locations





Informed Consent

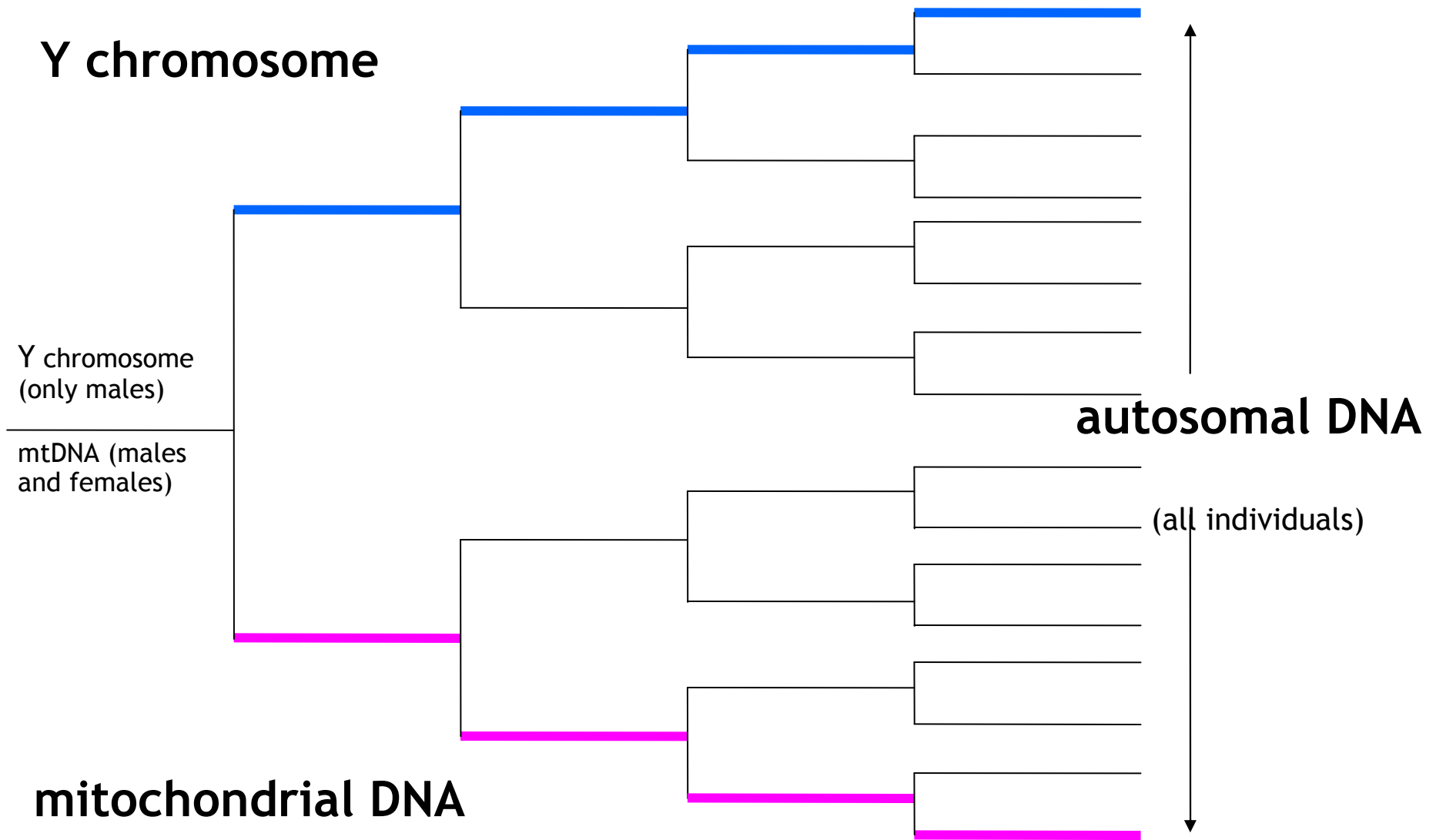
- Description of Study
- Procedures
- Risks
 - Linking genetic results to you
 - Loss of confidentiality
- Benefits
- Payments
- Voluntary Participation/Withdrawal
- Confidentiality
- Use of data
- Funding



Issues

- Privacy vs. self-awareness
- Who owns genetic (and genealogical or any other 'personal' data)?
 - Secondary participants
- Discrimination and effectiveness of GINA
- Social Networks based on DTC genetic testing results
 - mt and Y 'haplogroups'
 - Ethnicity

Genetic Systems and Genealogy



Who (What) am I?

- 2009
 - Utah, USA 100%
- 1956
 - Virginia, USA 100%
- 1933
 - Utah, USA 100%
- 1900
 - Utah, USA 75%
 - Leigh, Lancashire, England 25%
- 1800
 - USA 37.5%
 - England 25%
 - Denmark 12.5%
 - Sweden 12.5%
 - Switzerland 12.5%



www.SMGF.org

Applications Places System Scott Woodward Fri Aug 28, 11:41 AM


SMGF - Mozilla Firefox

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SMGF


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ABOUT SMGF | THE DATABASE | WHY PARTICIPATE | MOLECULAR GENEALOGY


 **SORENSEN MOLECULAR GENEALOGY FOUNDATION**

GROWING THE GENETIC FAMILY TREE ONE BRANCH AT A TIME

[About SMGF](#)




SORENSEN DATABASE




The Sorenson Database is the foremost collection of genetic genealogy data in the world. Search by DNA results or surname and find your place in the worldwide genetic family tree.

[Y-Database](#)
[mtDatabase](#)



Request a Participation Kit and add your branch to the genetic family tree

MOLECULAR GENEALOGY



Molecular Genealogy is the application of DNA to traditional genealogical research. Discover how DNA can help you expand your family history.

[Learn More](#)

WHAT'S NEW

Tribute to Mr. James LeVoy Sorenson

SMGF Collaborates with GeneTree

[More News](#)

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Done

SMGF - Mozilla Firefox Take Screenshot

Y Surname search

SMGF: Search the Y-Chromosome Database - Mozilla Firefox

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http://www.smgf.org/ychromosome/search.aspx

mixed breed dog picture

Home | Contact Us | FAQ | Search | scott.woodward@gmail.com

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Search the Y-Chromosome Database

Please select the appropriate Input Parameters and/or Marker Values. Click the **Search** button to begin searching.

Parameters

Select Lab Standard: ISFG [What is ISFG?](#)

Search By Surname: Woodward
 Exact
 Approximate

Search By Match (%):
 Exact Matches
 85% Matches
 70% Matches

Results Display Includes:
 Country
 Incomplete Data
 All Paternal-line Surnames

Values

Default Values Reset Values Clear Values

Marker	Value	Marker	Value	Marker	Value	Marker	Value
DYS385a,b	11 14	DYS426	12	DYS447	25	DYS461	12
DYS388	12	DYS437	15	DYS448	19	DYS462	11
DYS389I	13	DYS438	12	DYS449	29	DYS463	24
DYS389II	29	DYS439	12	DYS452	30	DYS464a,b	15 15
DYS390	24	DYS441	14	DYS454	11	DYS464c,d	17 17
DYS391	10	DYS442	17	DYS455	11	GGAAT1B07	10
DYS392	13	DYS444	12	DYS456	15	YCAIIa,b	19 23
DYS393	13	DYS445	12	DYS458	17	YGATAA10	15
DYS394/19	14	DYS446	13	DYS459a,b	9 10	Y-GATA-C4	23
				DYS460	11	GATA H4.1	—

Done

Y Search Result

SMGF: Y-Chromosome Search Results - Mozilla Firefox

File Edit View History Bookmarks Tools Help

SMGF: Y-Chromosome Sea...

Y-Chromosome Search Results

Lab Standard: ISFG

Result	Pedigree	TMRCAs	Matches	Y-STRs
				DYS385 DYS388 DYS389I DYS389II DYS390 DYS391 DYS392 DYS393 DYS394/19 DYS426 DYS437 DYS438 DYS439 DYS441 DYS442 DYS444 DYS445 DYS446 DYS447 DYS448 DYS449 DYS452 DYS454 DYS455 DYS456 DYS458 DYS459 DYS460 DYS461 DYS462 DYS463 DYS464 GGAA11B07 YCAII YGATAA10 YGATAC4 GATA H4.1
			11 14	
1			30/37	WOODWARD[USA-Kansas], WOODWARD[USA-Illinois], WOODWARD[USA-New York]
2			28/37	WOODWARD[USA-Utah]: 2 gen. WOODWARD[Canada]. WOODWARD[England]: 5 gen
3			28/37	WOODWARD[USA-Utah]: 2 gen. WOODWARD[Canada]. WOODWARD[England]: 5 gen
4			27/36	WOODWARD[~USA]: 2 gen
5			27/37	WOODWARD[USA-Iowa], WOODWARD[England]: 5 gen
6			27/37	WOODWARD[USA-New York]: 3 gen, WOODWARD[~USA-New York]
7			27/37	WOODWARD[Canada]: 2 gen
8			11/37	WOODWARD[USA-New York], WOODWARD[~USA-New York], WOODWARD[USA-New York], WOODWARD[USA-New York]
9			7/27	WOODWARD[USA-Utah], WOODWARD[USA-Iowa]
10			9/36	WOODWARD[USA-Florida]: 2 gen

Result Page (1 of 2): 1 · 2 · > · >>


Total Matches: 17

Done

Pedigree Result

SMGF: Pedigree - Mozilla Firefox

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 SORENSON MOLECULAR GENEALOGY FOUNDATION | Pedigree for Match #3

1st	2nd	3rd	4th
			Franklin James WOODWARD → b. 17 Mar 1875 Fountain Green, Utah, USA m. 8 May 1902 Orangeville, Emery, Utah d. 25 Aug 1937 Price, Carbon, Utah
	PROTECTED		Martha TATTON → b. 30 Nov 1883 Orangeville, Utah, USA m. 8 May 1902 Orangeville, Emery, Utah d. 3 Jan 1932 Price, Carbon, Utah
	PROTECTED		James Arthur PRESCOTT → b. 6 Jul 1880 Leigh, Lancashire, England
	PROTECTED		Bertha JACKSON → b. 13 Feb 1882 Leigh, Lancashire, England
	PROTECTED		Albert Clifton GARDNER → b. 29 Sep 1890 Farmington, Davis, Utah, USA m. 6 Aug 1885 Nephi, Juab, Utah, USA d. 15 Sep 1935 Clawson, Emery, Utah, USA
	PROTECTED	James Erastus GARDNER b. 2 Jul 1899 Huntington, Utah, USA m. 28 May 1930 St. George, Washington, Utah d. 28 Apr 1995 Provo, Utah, Utah	Sarah CHASE → b. 13 Jul 1867 Moroni, Sanpete, Utah, USA m. 6 Aug 1885 Nephi, Juab, Utah, USA d. 22 Jan 1922 Huntington, Emery, Utah, USA
	PROTECTED	Maudeen PRISBREY b. 20 Apr 1905 St. George, Utah, USA m. 28 May 1930 St. George, Washington, Utah	Miner Heber PRISBREY → b. 24 Apr 1872 St. George, Utah, USA d. 10 Nov 1943 Santa Monica, Los Angeles, California
			Lisette (Sadie) MATHIS → b. 17 Jan 1876 St. George, Utah, USA d. 13 Jun 1963 St. George, Washington, Utah

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Done

Discovering Identity


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SMGF: Success Stories

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 **Success Stories**

THE DATABASE

- Sorenson Database
- Y-Chromosome Database
- Mitochondrial Database
- Sample Collection Map
- Success Stories**
- Contact Us

- Seattle Woman Has Surprising Success
- A Little Success Story
- Marshall to Sizemore: Discovering Identity
- At-Risk Kids Find Their Families in South Africa

MARSHALL TO SIZEMORE: DISCOVERING IDENTITY

Martin Marshall's ancestral quest led him to discover that his father was not the one listed on his birth certificate, and ended with new family connections. Molecular genealogy made it possible, and is now helping Martin locate other living relatives.

The Challenge
Martin Marshall was anticipating the day he would become a grandfather, yet was not exactly sure who his own grandfather was. His father was not the one listed on his birth certificate, and his mother had misled him about his paternal lineage. Martin decided it was time to learn more about his ancestors.

The SMGF Solution
Martin signed up for a DNA test through a commercial testing company and later received his Y-Chromosome DNA results, but there were no matches in the company database for his genetic profile.


Martin then entered his DNA results into the Sorenson Database search engine and found a close Y-DNA match with three participants of the surname Sizemore.

This potential connection gave Martin a new starting point for his genealogy research, and Martin started researching the Sizemore surname and contacting people who were researching the family.

"He who boasts of his ancestry praises the merits of another."
.....
Lucius Annaeus Seneca

SHARE YOUR SUCCESS

If you have a success story of your own using genetic genealogy, we'd love to hear from you!

 [submit your story](#)

Done

Rediscovering Family

The screenshot shows a web browser window displaying the Sorenson Molecular Genealogy Foundation website. The browser's address bar shows 'SMGF: Success Stories'. The website has a navigation menu with links for Home, Contact Us, FAQ, Search, and Sign In. The main content area features a 'Success Stories' section with a list of articles, a quote from James L. Sorenson, and a 'SHARE YOUR SUCCESS' button. A sidebar on the left contains a 'THE DATABASE' menu with links to Sorenson Database, Y-Chromosome Database, Mitochondrial Database, Sample Collection Map, Success Stories, and Contact Us. The footer of the browser window shows 'Done'.


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SMGF: Success Stories

SORENSEN MOLECULAR GENEALOGY FOUNDATION

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AT-RISK KIDS FIND THEIR FAMILIES IN SOUTH AFRICA

Abandoned, homeless or lost children in South Africa struggle to stay out of trouble and accomplish something positive in their lives. Where other methods have failed, the Johannesburg Applied Ancestry Program helps them find their families through the powerful combination of genetics and genealogy.

The Challenge
In the Ngingubani region of South Africa, many children are abandoned or lost, and end up living on the streets of Johannesburg.

One of the greatest ways to help these children is to connect them to their extended families, who in turn, can help move their lives in more positive directions.


The SMGF Solution
The Applied Ancestry Program, working in conjunction with SMGF, has been able to gather DNA samples and find matches in the Sorenson Database that have allowed these children to connect with their families.

DNA testing provides an invaluable link in searching for and positively identifying individuals who have been separated for some time, often from an early age. These results are combined with genealogical information, much of which is gathered orally as part of Applied Ancestry's program.

"I can't think of anything that matters more than reminding people everywhere that, in a very real sense, we are all brothers and sisters."
.....
James L. Sorenson

SHARE YOUR SUCCESS

If you have a success story of your own using genetic genealogy, we'd love to hear from you!

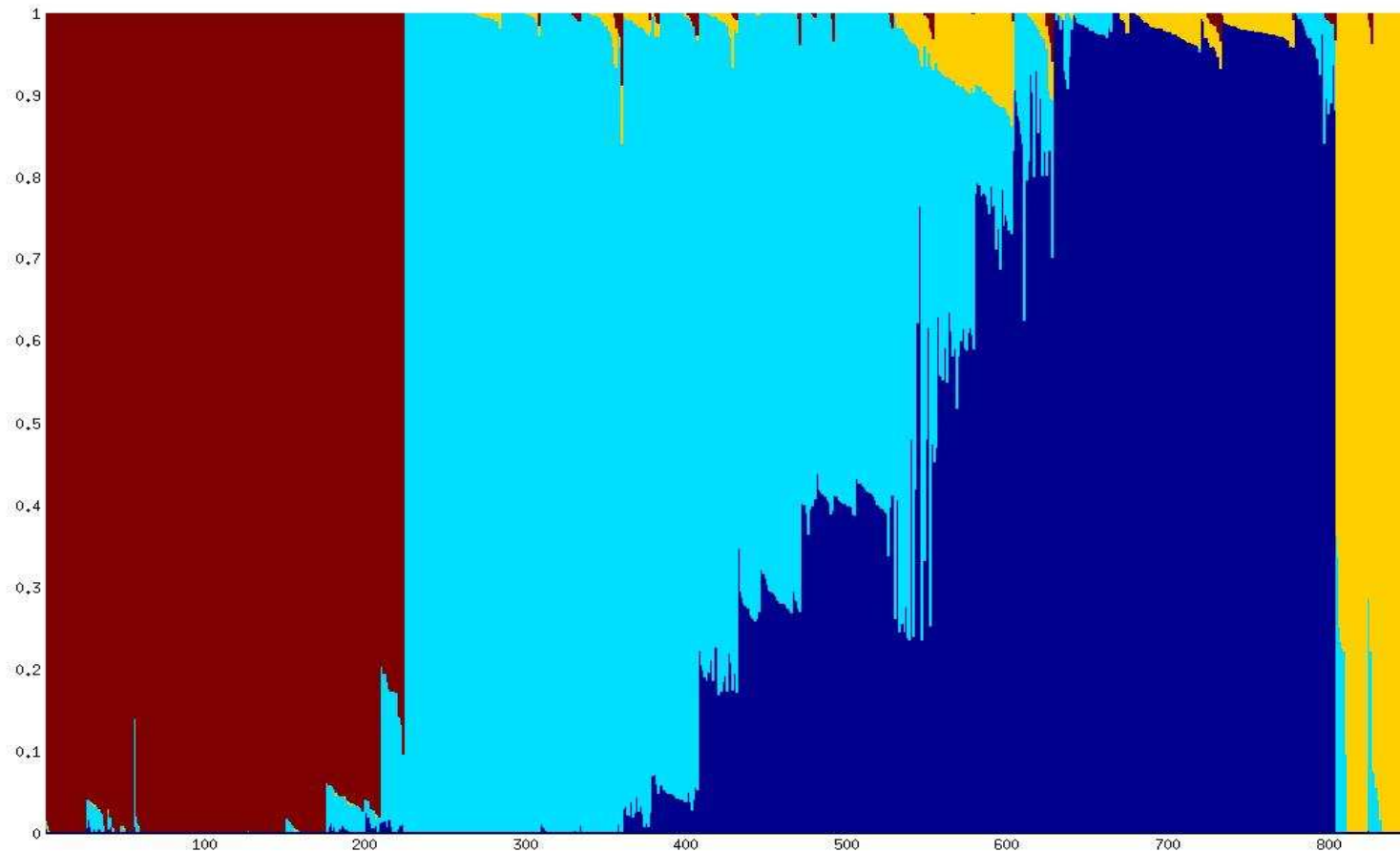
 submit your story

Done

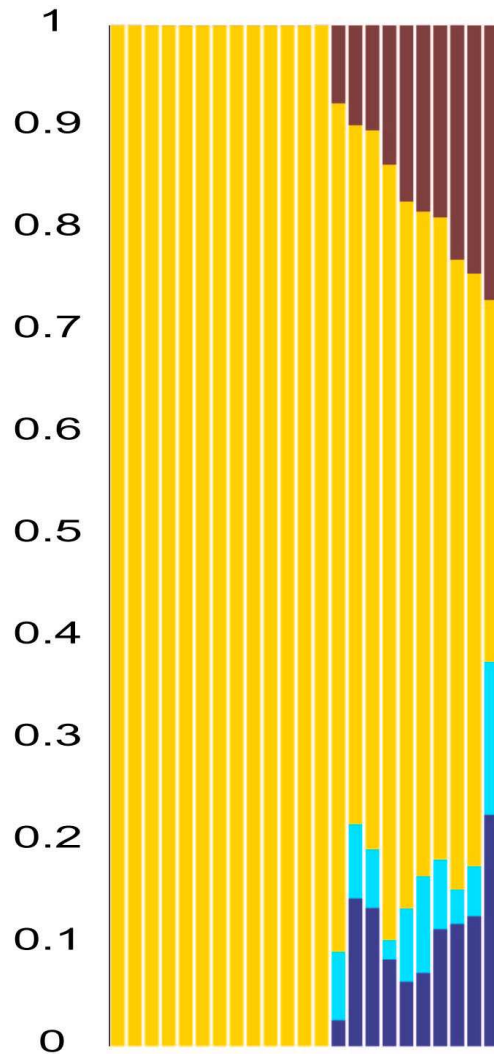
Discovering Community

The screenshot shows a web browser window with the address bar displaying "SMGF: Success Stories". The website header includes the SMGF logo and navigation links: Home | Contact Us | FAQ | Search | Sign In. The main content area is titled "Success Stories" and features a sidebar menu under "THE DATABASE" with options: Sorenson Database, Y-Chromosome Database, Mitochondrial Database, Sample Collection Map, Success Stories (highlighted), and Contact Us. The main text area includes a list of success stories: "Seattle Woman Has Surprising Success", "A Little Success Story", "Marshall to Sizemore: Discovering Identity", and "At-Risk Kids Find Their Families in South Africa". A featured article titled "SEATTLE WOMAN HAS SURPRISING SUCCESS" is highlighted, with a sub-header "Discovering an exact match on Sorenson Molecular Genealogy Foundation's newly released online mtDNA-ancestry database helps amateur genealogist learn her likely overseas region of origin and surnames, a result unthinkable only a few years ago." Below this is a quote from Cynthia Wilson and a paragraph about the impact of DNA testing on genealogy. A "SHARE YOUR SUCCESS" box with a "submit your story" button is also visible. The browser's status bar at the bottom shows "Done".

Autosomal admixture

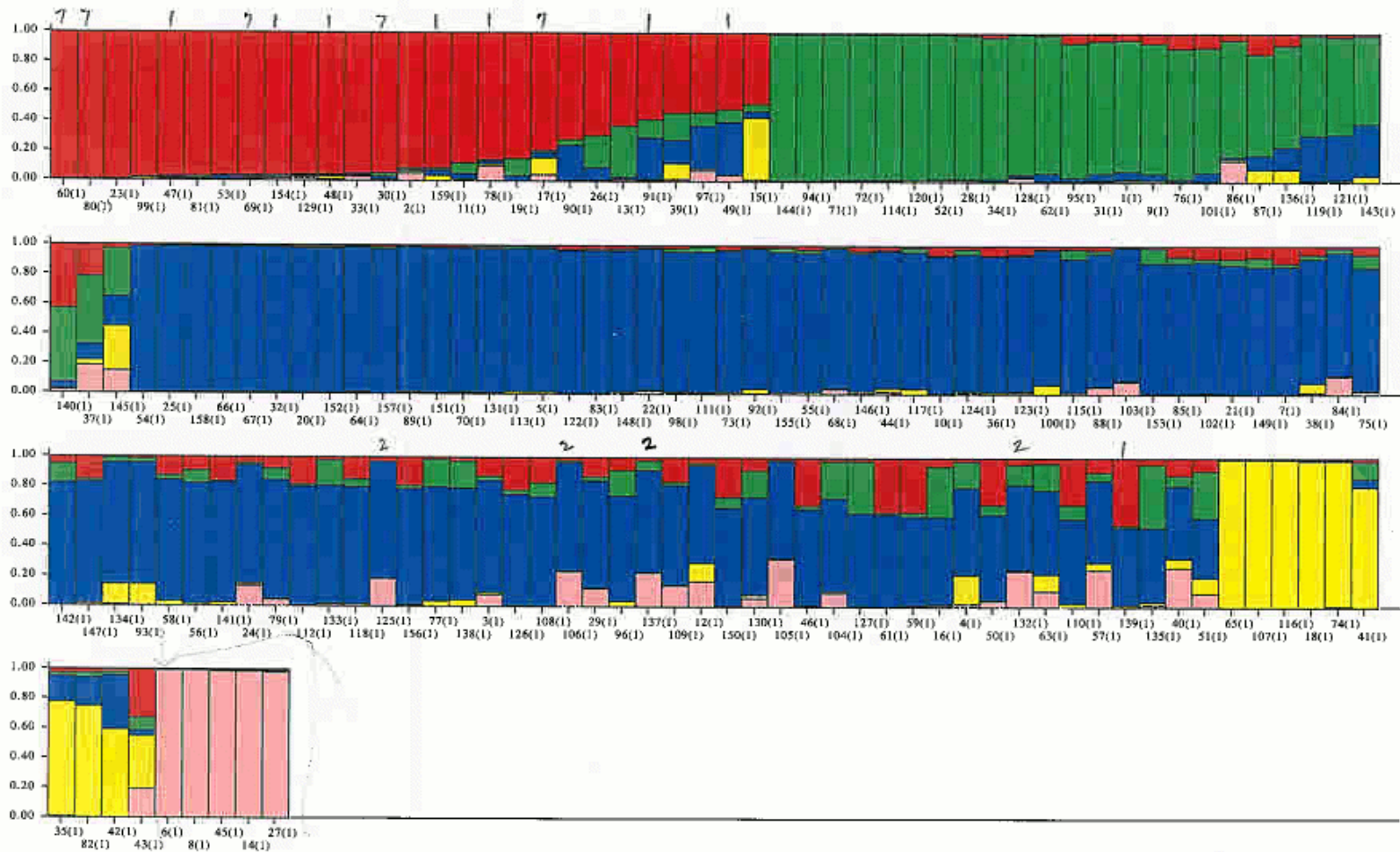


A Native American Group

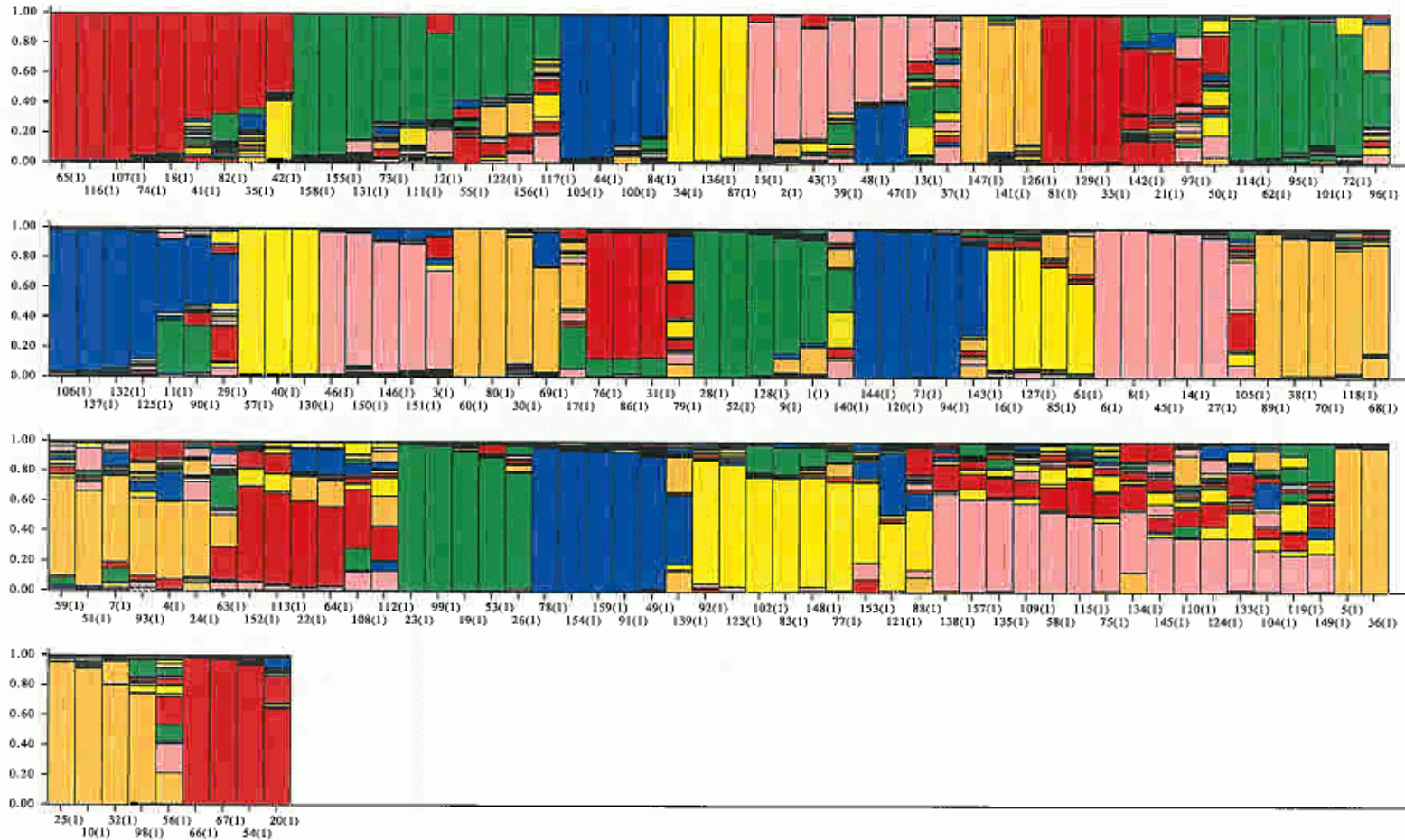


- Samples from Bolivia
- Affymetrix 6.0 data

Filomena k=5



Filomena k=26



What does “Race” mean?



Collaborative Efforts



The Phylogeny of the Four Pan-American MtDNA Haplogroups: Implications for Evolutionary and Disease Studies

Alessandro Achilli^{1,2}, Ugo A. Perego^{1,3}, Claudio M. Bravi⁴, Michael D. Coble⁵, Qing-Peng Kong^{6,7}, Scott R. Woodward³, Antonio Salas⁸, Antonio Torroni^{1*}, Hans-Jürgen Bandelt⁹

Y-chromosome Short Tandem Repeat Intermediate Variant Alleles DYS392.2, DYS449.2, and DYS385.2 Delineate New Phylogenetic Substructure in Human Y-chromosome Haplogroup Tree



Natalie M. Myres¹, Kathleen H. Ritchie¹, Alice A. Lin², Robert H. Hughes¹, Scott R. Woodward¹, Peter A. Underhill²

European Journal of Human Genetics (2008), 1–11
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www.nature.com/ejhg

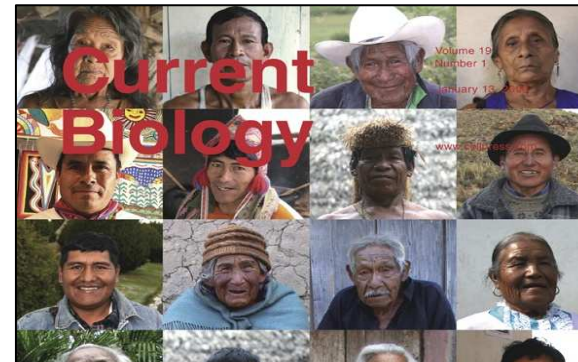
ARTICLE

Y-chromosomal evidence of the cultural diffusion of agriculture in southeast Europe

Vincenza Battaglia¹, Simona Fornarino^{1,12}, Nadia Al-Zahery¹, Anna Olivieri¹, Maria Pala¹, Natalie M. Myres², Roy J. King³, Siiri Roots⁴, Damir Marjanovic^{5,6}, Dragan Primorac^{7,8}, Rifat Hadziselimovic⁹, Stojko Vidovic⁹, Katia Drobnic¹⁰, Naser Durmishi¹¹, Antonio Torroni¹, A Silvana Santachiara-Benerecetti¹, Peter A. Underhill² and Ornella Semino^{1*}

Y-chromosome Short Tandem Repeat DYS458.2 Non-consensus Alleles Occur Independently in Both Binary Haplogroups J1-M267 and R1b3-M405

Natalie M. Myres¹, Jayne E. Ekins¹, Alice A. Lin², L. Luca Cavalli-Sforza², Scott R. Woodward¹, Peter A. Underhill²



Distinctive Paleo-Indian Migration Routes from Beringia Marked by Two Rare mtDNA Haplogroups

Ugo A. Perego,^{1,2,9} Alessandro Achilli,^{1,3,9} Norman Angerhofer,² Matteo Accetturo,¹ Maria Pala,¹ Anna Olivieri,¹ Baharak Hooshier Kashani,¹ Kathleen H. Ritchie,² Rosaria Scozzari,⁴ Qing-Peng Kong,^{5,6} Natalie M. Myres,² Antonio Salas,⁷ Ornella Semino,¹ Hans-Jürgen Bandelt,⁸ Scott R. Woodward,² and Antonio Torroni^{1,*}

The American Journal of Human Genetics 84, 814–821, June 12, 2009

REPORT

Mitochondrial Haplogroup U5b3: A Distant Echo of the Epipaleolithic in Italy and the Legacy of the Early Sardinians

Maria Pala,¹ Alessandro Achilli,^{1,2} Anna Olivieri,¹ Baharak Hooshier Kashani,¹ Ugo A. Perego,^{1,3} Daria Sanna,⁴ Ene Metspalu,⁵ Kristiina Tambets,⁵ Erika Tamm,⁵ Matteo Accetturo,¹ Valeria Carossa,¹ Hovirag Lancioni,² Fausto Panara,² Bettina Zimmermann,⁶ Gabriela Huber,⁶ Nadia Al-Zahery,^{1,7} Francesca Brisighelli,⁸ Scott R. Woodward,³ Paolo Francalacci,⁴ Walther Parson,⁶ Antonio Salas,⁸ Doron M. Behar,⁹ Richard Villems,⁵ Ornella Semino,¹ Hans-Jürgen Bandelt,¹⁰ and Antonio Torroni^{1,*}