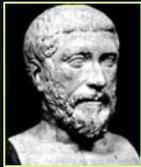


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INSTITUTE FOR HUMAN INDIVIDUALITY

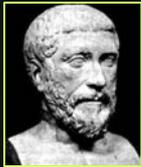


A century of blood type science



Past and future: A century of blood type science.

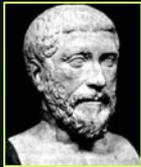
Peter D'Adamo, ND



A century of blood type science

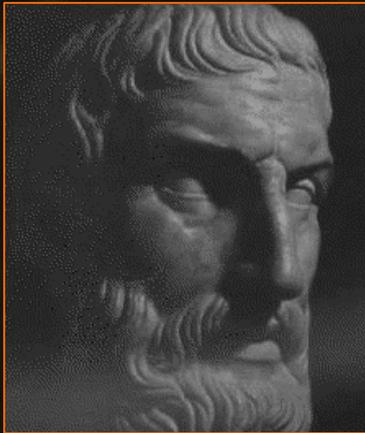
The Past: 100_{BCE} - 2003_{CE}



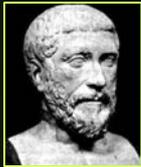


A century of blood type science

Marcus Lucretius



- The ancient Roman poet and philosopher, Lucretius, was quoted as saying: "One man's food may be another man's poison".
- This quote applies rather nicely to food allergies, poisons, reactions and sensitivities; but has not been uniformly applied to the concept of food assumed 'better than average function in genetically predictable populations.

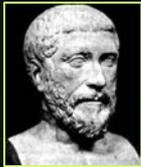


A century of blood type science

Jean Baptiste Denis



- Jean-Baptiste Denis was court physician to King Louis XIV in France when in 1667 he treated a manic, violent 16-year-old boy named Antoine Mauroy.
- Since Mauroy had already been bled several times by other physicians, which was the leading curative therapy of the day for many medical conditions, Denis decided to try the opposite therapy—infusing blood into Mauroy in hopes of calming him down.
- Using a silver tube, Denis took nine ounces of blood from a calf and transfused it into one of the patient's veins. Despite an initial inflammation, Mauroy survived the first successful transfusion from animal to human. After a second transfusion, Mauroy's condition significantly improved.

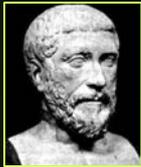


A century of blood type science

James Blundell



- English obstetrician James Blundell revived the practice of transfusion when he determined in 1818 that blood transfusion would be an appropriate treatment for severe postpartum hemorrhage.
- Using animals, Blundell further conducted his own experiments and proved that blood could be transfused with a syringe even after it had been collected into a container, as long as it was used with little delay.
- In 1829, Blundell transfused a patient suffering from severe postpartum hemorrhage with four ounces of blood taken from her husband. The woman survived, and Blundell continued to perfect his transfusion devices and techniques.
- But without knowing anything about blood compatibility, only about half of Blundell's transfusions actually resulted in patient benefit.

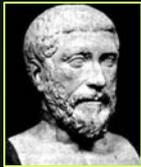


A century of blood type science

Karl Landsteiner and blood groups



- In 1900, Landsteiner observed that the red cells of some individuals were agglutinated by the serum of others and his detailed report a year later heralded the discovery of the first human blood groups.
- His limited experiments on laboratory colleagues demonstrated three distinct groups; his pupils Von Decastello and Sturli discovered a fourth group in 1902.
- It was 25 years before these groups were shown to be inherited as Mendelian characters by means of three allelomorphic genes *A*, *B* and *O* and were, in fact, entities of one blood group system.

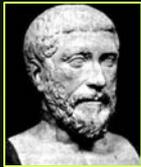


A century of blood type science

Jan Jansky

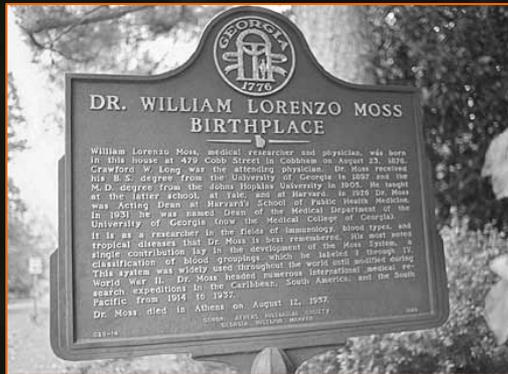


- Wanted to find out if the serum of the psychotic patients, specially schizophrenics, differed by its coagulation characteristics from the one from the normal people.
- With the reaction pattern observed by the coagulation of the blood, Jansky established in 1907 the four ABO blood groups.

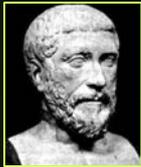


A century of blood type science

William Lorenzo Moss



- Three years later, without knowledge of Jansky's studies, William Moss worked out the reciprocal agglutinating reactions of the four blood groups and classified them accordingly.
- This led to the development of the Moss System, a classification of blood groups, which he labeled I through IV.
- The confusion that arose because of differences in nomenclature was eliminated after World War I, when the numbers previously used to designate blood groups were replaced by the letters A, B, AB, and O, the agglutinogens in Landsteiner's original scheme.

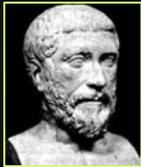


A century of blood type science

Hermann Stillmark



- Discovered the first two lectins, ricin and abrin while researching his doctoral thesis at the University of Dorpat in Estonia in 1888
- While investigating the toxic effects on blood of castor bean extract (*Ricinus communis*) Stillmark noticed that the red cells were being agglutinated. The material responsible for the agglutination was isolated and called ricin. Shortly afterward at the same university it was discovered that the toxic extract of the seed *Abrus precatoris* also caused cells to clump together. This new agglutinin was called abrin.

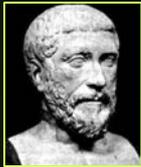


A century of blood type science

Paul Ehrlich



- Stillmark's findings immediately caught the attention of the German bacteriologist Paul Ehrlich who recognized that he could investigate certain immunologic problems with them rather than the then-popular bacterial toxins.
- Ehrlich discovered that feeding small amounts of lectin containing seeds to rabbits caused partial immunity to their toxicity demonstrating lectins are also antigenic (able to induce antigen antibody reactions).
- Ehrlich's work with these lectins became the very foundation of the discipline of immunology. Since the toxins are much less toxic when given by mouth than by injection, Ehrlich was able to induce immunity by feeding mice or rabbits small amounts of the seeds.



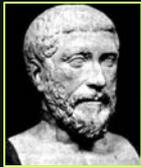
A century of blood type science

Karl Landsteiner and lectins



- Landsteiner was aware of Stillmarks work with lectins, and wrote in a paper 1914 entitled "Pflanzliche Hammagglutinine." that he had observed that these extracts did not always agglutinate the blood of different species equally.
- In 1908 he had reported that small amounts of lentil lectin would agglutinate rabbit erythrocytes, even high concentrations of the lectin had no effect on pigeon red cells.
- This paper reached the stage of page proof, but owing to the war of 1914 was never published until the first edition of his book (1933) "Die Spezifizitat der Scrologischen Reaktionen."

Agglutinin from	Titer of blood for		Agglutinin from	Titer of blood for	
	Rabbit	Pigeon		Horse	Pigeon
Beans	125	2000	Abrus precatorius	128	256
Lentils	160	0	Castor bean	4	512



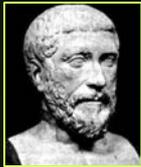
A century of blood type science

William Clouser Boyd



• Boyd, William Clouser.
*Genetics and the Races of Man: An
Introduction to Modern Physical
Anthropology.*

- American immunochemist, who with his wife Lyle, during the 1930's, made a worldwide survey of the distribution of blood types. He discovered that blood groups are inherited and not influenced by environment.
- Suggested that human races are populations that differ in the difference of their alleles. On this basis, he divided the world population into 13 geographically distinct races with different blood group gene profiles. He also studied the blood groups of mummies.
- Boyd defined race as "not an individual, not a single genotype, but a group of individuals more or less from the same geographical area (a population), usually with a number of identical genes, but in which many different types may occur."
- For Boyd you got your racial characteristics from where you live more than from your genes, and this explained why the variability made the notions of race untenable.



A century of blood type science

William Clouser Boyd

12/30

Tests for agglutination in Sea Blood

1 cc. of Lima Beans washed in H₂O overnight -
Pill Schwann's choppers next day - Extracted
about 24 hours in 3 volumes of saline and
filtered - centrifuged to separate supernatant -
Supernatant tested as A, B, O.

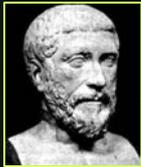
Tests

A (red)	B (S. H. sea)	O (C.F.)
+++	+	0

Repeat 2 many times (see notes), B. + O's.

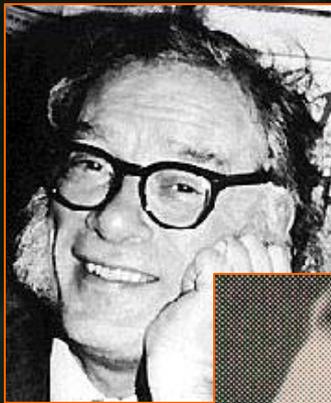
Sample	Result	Notes	
1. Sea	+++	H bloods	
2. M. F. W.	+++		
3. Anderson	+++		
4. J.B.	+++		
5. G.H.	+++		
6. H.C.B.	+++	O bloods	
7. House	0		
8. Stetson	0		
9. Johnson	0		
10. O'Neil	0		
11. Henry	0		
12. Washburn	0		
13. Knight	+		H bloods

- “One day toward the end of 1945, looking at this table in the second English edition of Landsteiner's book, I was seized with the idea that if such extracts could show species specificity, they might even show individual specificity; that is, they might possibly affect the red cells of some individuals of a species and not affect others of the same species.”
- “Therefore, I asked one of my assistants to go out to the corner grocery store and buy some dried lima beans. Why I said lima beans instead of the more common pea beans or kidney beans I shall never know. But if we had bought practically any other bean we would not have discovered anything new.”
- “I proposed that these blood-antigen-specific plant agglutinins (which are also specific precipitins) be called "lectins" -from the Latin *legere*, to pick out or choose -intending thus to call attention to their specificity without begging the question as to their nature.”

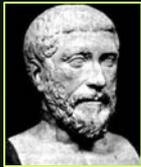


A century of blood type science

William Boyd and Isaac Asimov



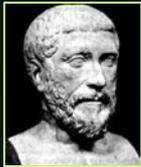
- Boyd wrote some pretty good science fiction (under the name “Boyd Ellanby”) including two well-known books,
 - *Category Phoenix*, May, 1952.
 - *Chain Reaction*, September, 1956.
- Boyd teamed up with Isaac Asimov used his work with blood types in Races and People to demolish the racist notions then commonly believed in this country during the 1950's.
- Boyd and Asimov, as unabashed liberals and champions of the essential value of any human being, attack the notion of "race" and use Boyd's research to demonstrate that the superficial characteristics which so many of us use to define "race" and determine our value vis-à-vis other human beings are utterly without value.



A century of blood type science



- **Hirszfeld, Ludwik** (1884-1954), born in Warsaw, Poland. He was a professor of microbiology and immunology; established the foundation of knowledge of human blood types. He also introduced the new cholera vaccination while he had worked in Serbia. His works include the edition of first Polish medical periodical that dealt with experimental medicine. After War World II, he co-organized the Maria Sklodowska-Curie University in Lublin, where he taught.
- With regard to blood type, Jewish groups show considerable differences among themselves and marked similarities to the Gentile
- environment. The Hirszfeld 'biochemical index' $(A + AB) / (B + AB)$ can be used most conveniently to express this. A few typical examples are: German Jews 2.74, German Gentiles 2.63; Rumanian Jews 1.54, Rumanian Gentiles 1.55; Polish Jews 1.94, Polish Gentiles 1.55; Moroccanjews 1.63, Moroccan Gentiles 1.63; Iraqijews I-22, Iraqi Gentiles I-37; Turkistan Jews 0-97, Turkistan Gentiles 0.99.

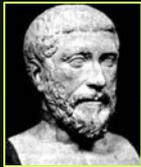


A century of blood type science

AE Mourant



- Published the first description of an antibody in the Lewis system was published in 1946 .
- Lewis system antibodies are some of the most frequently encountered in pre-transfusion or pre-natal screening. Anti-Lewis (a) is the most frequent antibody in the Lewis system, is often naturally occurring and is of the IgM class.
- Anti-Lewis (b) exists in two forms: one reacts only with Le(b+) cells of the A2 or O type (anti-LebH) while the other reacts with all Le(b+) cell regardless of ABO type.
- Published first comprehensive work on blood groups and disease. (Mourant AE, Kopec AC. Blood group and disease. Oxford: Oxford University Press, London, 1978)
- Published first comprehensive work on blood groups and anthropology since Boyd. (**Mourant, AE** (1985): Blood relations: blood groups and anthropology. Oxford Univ. Press, Oxford.)



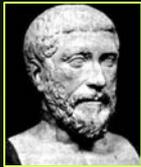
A century of blood type science

Joseph Aub



Although many lectins are destroyed by normal cooking (which is why grains and beans are edible), many are not. Relative resistance to heat was part of the classic description of wheat germ agglutinin (WGA) made by Aub and colleagues in 1963, and enabled them to distinguish it from the wheat germ lipase from which they got it.

- In 1963, Joseph Aub, a researcher at Massachusetts General Hospital, discovered by chance that there were many surface differences between normal cells and cancer cells, an idea that was thought at the time to be so strange, as in the words of one biographer, "to border on lunacy".
- Aub believed that these differences enabled cancer cells to multiply when normal cell would not, detach from their primary site, and spread throughout the body.
- Aub originally worked with enzymes, attempting to digest certain portions of the cancer cell's surface to see if there were any differences.
- Then, as with many medical discoveries, luck intervened. Of all the enzymes he used, only one, derived from wheat germ, showed any effect, agglutinating the cancer cells. When he replaced this enzyme with an identical one from hog pancreas, again, nothing happened. Obviously, something in the wheat germ, (other than the enzyme Aub was looking at) was agglutinating the cancer cells.
- As a matter of fact, when he heated the wheat germ extract and destroyed the enzyme, it continued to destroy cancer cells. Aub and his colleagues soon found that the wheat germ enzyme was contaminated with a small protein that was responsible for the agglutinating activity. Aub had discovered a lectin in wheat germ that agglutinated the cancer cells.

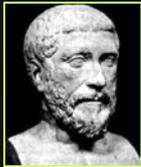


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George Springer

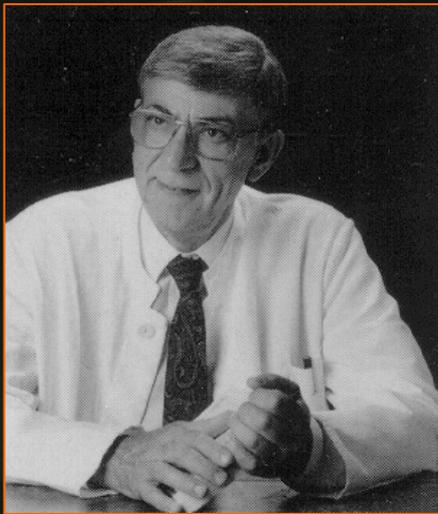


- Major investigator of blood groups antigens as found in other living systems. Isolated BGAs from *Fucus vesiculosus*, meconium, hog mucin and a variety of plant flora and fauna.
- More than anything else, this prompted the adoption of a wider concept of blood group significance in microbial systems and hence in infectious diseases.
- Discovered chemical structure of T and T_n antigens. Discovered CA15-3 tumor marker as a direct result of work with T and T_n.
- First developer of vaccine therapy specifically detailed against T and T_n epitope.

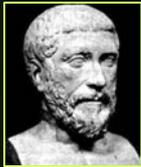


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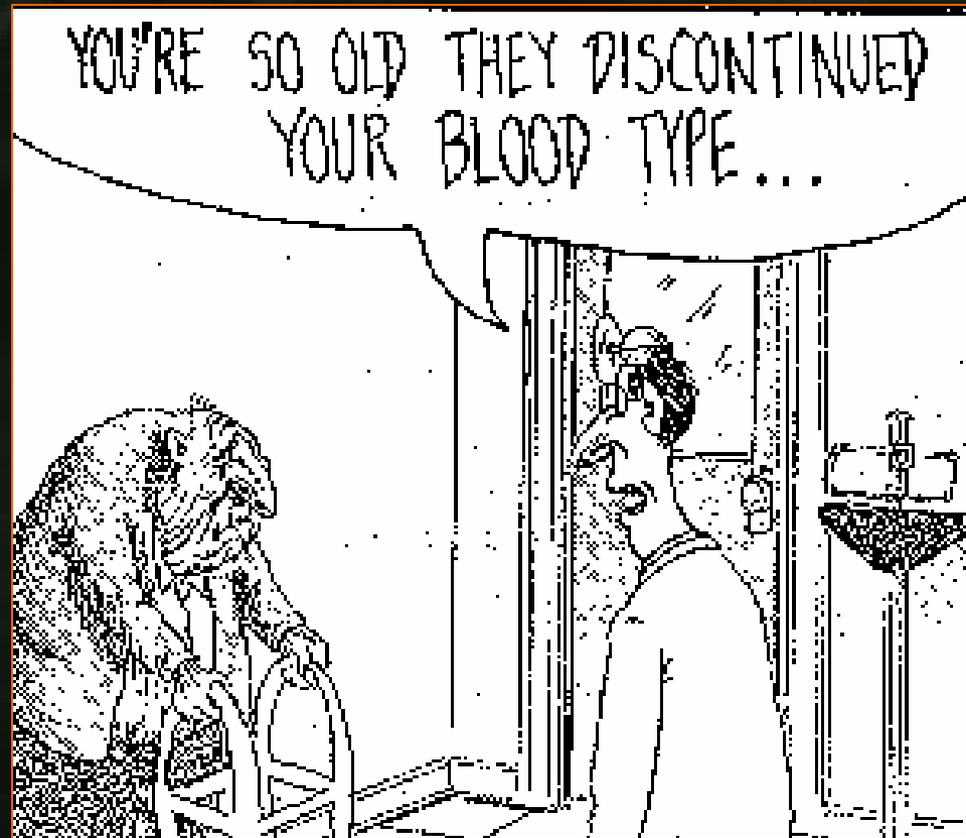
James D'Adamo

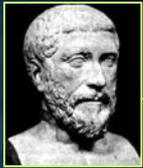


- Asked very basic question: Could aspects of ABO blood group influence uptake of nutrients and foods?
- Limited by empirical nature of observations (a common disadvantage of 1950-60 era naturopaths who had no access to labs or citation services)
- By clinical observation was able to determine basic outlines of blood type physiology: Type Os did poorly on vegetarian diets; type Bs seemed most resilient to chronic diseases; type As appeared to have lower levels of HCl.



A century of blood type science





A century of blood type science



IfHI: New beginnings



A century of blood type science

IfHI's Mission and Vision



The Institute's mission is:

To advance the scientific basis and clinical application of human individuality in health and disease, through medical education, outreach, research and patient care.

Its Vision is:

To transform medicine through individualized patient treatments in: therapeutic nutrition, pharmacology including botanical medicine and prescription drugs, diet and lifestyle counseling.

Key Components of IfHI



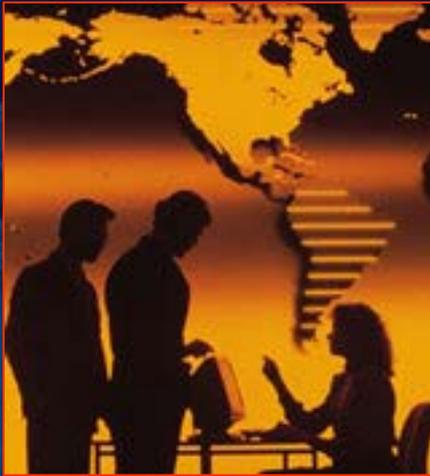
- Administration
- Research
- Faculty
- Membership
- Conference/ Publications
- Grants/ Fundraising

Administration



- IfHI is administered by a Board of Governors selected from the fellows of the Institute, representatives from Southwest College of Naturopathic Medicine, the faculty, and corporate sponsors.
- The major task of the BOG is to maintain continuity within the Institute, handle appropriations and expenses incurred, and set long-term policy.
- Maintain rolls of academy membership.

Membership



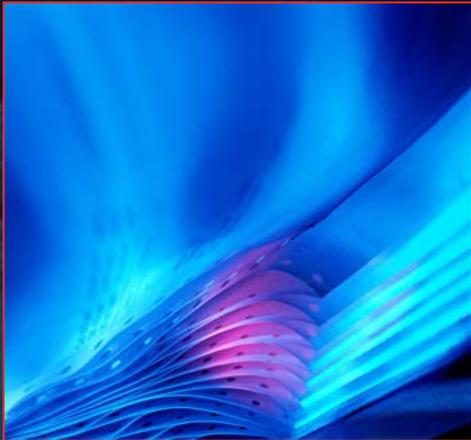
- Membership in IfHI is open to anyone interested in supporting the mission.
- Members act as ambassadors of IfHI and will take an active interest in fund-raising and development.
- Certified members (Fellows) are entitled to append the moniker FIFHI after any other professional degrees.
- Members shall pay a nominal annual fee to maintain membership.
- Members will be registered and their contact address will be available as a referral source on the internet.
- Members will agree to continue to develop their skills via continuing education.

Grants/Fundraising



- IfHI is a 501c3 under the auspices of Southwest College of Naturopathic Medicine, who will derive no funds from it.
- Gifts to IfHI will in themselves not fund research, as this is a poor use of seed money. Instead it will underwrite IfHI's efforts to secure funding from standard funding sources, such as NIH.
- Funding goals for Year Three are \$500,000 endowment and \$200,000 operating funds.

Conference/ Publications



- IfHI will produce and coordinate a bi-annual conference.
- The goal is to bring together investigators, medical professionals and the lay public to discuss progress in and the future of medical therapies based upon individual characteristics, including genetic markers.
- Beginning year three, IfHI will produce an annual Proceedings of the Institute for Human Individuality journal.
- Members will also maintain contact with IfHI through e-newsletters and online forums.

Faculty



- Provide core educational component.
- Monitor , foster and approve experimental design.
- Coordinate grant writing.
- Provide peer review for publications and articles.
- Design and proctor certification examination.

Research



- Research under IfHI auspices will attempt to discover new potential avenues of approach to enhancing health or treating human disease.
- This can include continuation of research evaluating the effects of food and diet on human function as predicted by genetic markers of individuality, such as blood group; the effect of natural products on unique physiologic and disease processes; basic research into the effects of dietary lectins, agglutinogens and agglutinins; genetic linkage.
- Research will be multi-centered.

Research frontiers



- Examination of the effects of dietary lectins and other proteins on cellular adhesion molecules, as predicted by ABO blood group.
- Investigation of the effect of blood group specific dietary recommendations on patients with Idiopathic Thrombocytopenia (ITP).
- Reconstitution and further development of the Neo-Springer Vaccine Treatment.
- Effects of mitogenic lectin administration on smallpox humoral immunity in pre-vaccinated subjects.
- Effect of Lewis A analogs and Sialyl Lewis X specific lectins on *H. pylori* colonization.
- Effect of low-lectin diet on rheumatoid arthritis.
- Effect of dietary lectins on *C. albicans* colonization

Collaborating Researchers and Academicians



- Program in Integrative Medicine, College of Medicine, University of Arizona
- Respiratory Sciences Center, University of Arizona
- College of Pharmacy, University of Arizona
- Microbiology Department, Molecular Cellular Biology Program, Plant Biology Department, Arizona State University
- Department of Exercise and Wellness, Arizona State University East
- College of Pharmacy, Ohio State University
- Phoenix VA Medical Center
- Phoenix Children's Hospital
- Maricopa Integrated Health System
- International Child Development Resource Center
- Research collaborators include MDs, PhDs, MPHs, RNs, and other practitioners

Partnerships with Universities and Medical Centers



- Yung Chang, PhD, Associate Professor, Department of Microbiology, Arizona State University.
- Pamela Swan, PhD, Program Director, Department of Exercise and Wellness, Arizona State University
- Jim Adams, PhD, Professor, Chemical and Materials Engineering, Arizona State University (Adjunct Professor)
- Michael Goul, PhD, Professor and Director, MBA Program and Computer Information Systems Doctoral Program, Arizona State University (Adjunct Professor)
- Leslie Gunatilaka, PhD, Professor, Natural Products Chemistry, University of Arizona (Adjunct Professor)
- Lewis Mehl-Madrona, MD, PhD (Adjunct Associate Professor)
- Dennis Clark, PhD, Associate Professor, Department of Plant Biology, Arizona State University (Adjunct Associate Professor)



A century of blood type science

The success of
Institute for Human Individuality holds
forth the promise of a longer, safer
and healthier life for us all.

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INSTITUTE FOR HUMAN INDIVIDUALITY