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LinkSēq genotyping: Fast, easy molecular antigen typing

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Statement of the Problem: Blood typing using serology can provide an inaccurate answer if a patient is recently transfused, taking oncology therapeutics like Darzalex, or has weak or partial antigens. Antisera are not always available for rare antigens. Chronically transfused patients can avoid alloimmunization by receiving antigen-negative blood units, but building a complete patient or donor antigen profile using serology is labor-intensive and can take days. Blood genotyping using traditional methods such as SSP and SSO overcome the limitations of serotyping, but require long, labor-intensive workflows and limited resolution. Blood genotyping using Sanger or NGS sequencing technology have high resolution, but are even more time and labor consuming, expensive and require interpretation by subject matter experts.

Solution: Thermo Fisher Scientific's Link Sēq real-time PCR technology accelerates turn-around times reducing laboratory costs and provides medium to high resolution results that can be interpreted by clinicians and interrogated by genotyping experts. LinkSēq utilizes allele specific PCR reactions to identify important variants and its SureTyper™ software analyzes reaction results to automatically determine the genotype and predict a phenotype. LinkSēq was developed over 10 years ago for genotyping the complex Human Leukocyte Antigen (HLA) system and can be performed on the same equipment as real-time PCR based HLA typing assays, which are widely used for deceased donor typing.

Conclusion & Significance: LinkSēq blood genotyping solutions overcome the major challenges of molecular typing by providing a robust, automated approach that increases laboratory productivity and reduces turn-around time. With less than 10 minutes of hands on set-up, no further operator intervention with reagents and SureTyper software by fully automating all analysis, LinkSēq delivers genotyping and predicted phenotyping results in approximately 90 minutes.

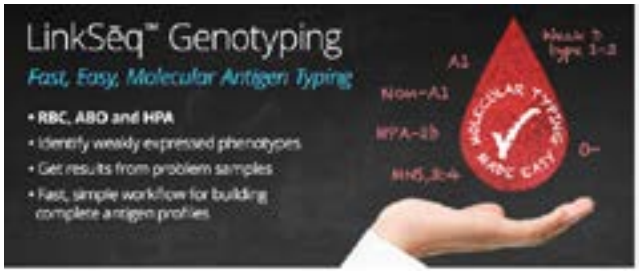

Figure: linkSeq Genotyping

Recent Publications

1. Keller M A (2015) The role of red cell genotyping in transfusion medicine. Immunohematology 31(2):49-52.
2. Flegel W A, Gottschall J and Denomme G (2015) Implementing mass-scale genotyping at a blood center. Transfusion 55(11):2610-5.

3. Kacker S, Vassallo R, Keller M A, Westhoff C M, Frick K D, Sandler S G, Tobian A A (2015) Financial implications of RHD genotyping of pregnant women with a serologic weak D phenotype. Transfusion 55(9):2095-103.
4. Sandler S G, Flegel W A, Westhoff C M, Denomme G A, Delaney M, Keller M A, Johnson S T, Katz L, Queenan J T, Vassallo R R and Simon C D (2015) It's time to phase in RHD genotyping for patients with a serologic weak D phenotype. College of American Pathologists Transfusion Medicine Resource Committee Work Group. Transfusion 55(3):680-9.
5. Silvy M, Tournamille C, Babinet J, Pakdaman S, Cohen S, Chiaroni J, Galactéros F, Bierling P, Bailly P and Noizat-Pirenne F (2014) Red blood cell immunization in sickle cell disease: evidence of a large responder group and a low rate of anti-Rh linked to partial Rh phenotype. Haematologica 99(7):e115–e117.

Biography

Matthew Frome is Senior Manager of Business Development at Thermo Fisher Scientific. He brings over 20 years of industry experience. Most recently, he was VP of Business Development at Linkage Biosciences (acquired by Thermo Fisher Scientific in 2018), and Director of Business Development at Solazyme. Before Solazyme, author founded Focus Biology, a start-up bioinformatics company. Prior to Focus, he held various roles of increasing responsibility at GE Healthcare (Amersham Biosciences/Molecular Dynamics), Sangamo Biosciences, Applied Biosystems and Sungene Technologies. He received an MBA and Masters of Public Health from the University of California, Berkeley and a MS in Biology from Stanford University.

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