A common laboratory challenge: Harmonizing the HLA-DPB1 antibody specificity nomenclature, and UNOS requirements, for unacceptable antigens in HistoTrac™ using software automation

Phillip R. Fisher[1, 2], Neng Yu[3], Kesherwani, Varun[3], Efi Melista[1], Patrick Ching[1], Susie Brown[1]

[1]Transplant Diagnostics Division, Thermo Fisher Scientific, Statesville, NC, United States. [2] ASHI, Statesville, NC, United States. [3]HLA Services, American National Red Cross, Dedham, MA, United States.

Introduction

The HLA laboratories in the US supporting solid organ transplantation use an established process to upload unacceptable antigen (UA) results to UNET following ASHI & OPTN(UNOS) Standards. UNOS requires the DPB1 antibody specificities to be reported at a two-field allele level. This is in part to meet current typing methodologies employed by HLA labs as well as to ensure patient safety, organ allocation, and accurate reporting of DPB1 antibodies that can affect graft survival. The current HLA antibody single antigen bead (SAB) assays offered by OneLambda™ uses HLA Fusion™ software for analysis, which uses a terminology different from what is acceptable under current standards, forcing the lab staff to manually edit every DPB1 antibody assignment. Since the terminology used is outdated for todays standards, it could result in inappropriate organ allocation, unexpected positive crossmatches, increased cold ischemia time, and the potential for transplanting incompatible organs. This work aims to develop a solution that harmonizes the DPB1 antibody assignment nomenclature in HistoTrac to meet ASHI and UNOS requirements automatically; eliminating manual editing, reducing data error, and improving test quality to support critical patient needs.

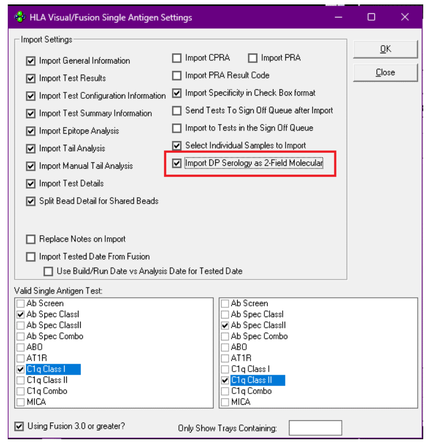
Methods

Since changing HLA Fusion to address the required format adjustment in an automated way will be challenging, we have identified a process to address it via the HistoTrac LABScreen custom import utility (OneLambda). A custom setting can be utilized to specifically address this need and promptly automate the DPB1 antibody data formatting adjustment during data import. Subsequently, the adjusted data is imported into HistoTrac, which can then be automatically uploaded to UNET via the UNOS API.

Results

A custom setting in the LABScreen import utility has been employed (Figure 1) that successfully transforms the data to the UNOS acceptable format for all loci, including DPB1, regardless of how the call in the HLA Fusion software was made, thereby automating the data transfer between systems without the need for manual changes.

Figure 1. An optional custom setting in the HistoTrac LABScreen import utility to automatically adjust to the required DPB1 data format.



Here we demonstrate how the automated adjustment works using a common example for DPB1. As shown in Figure 2, we assign DPB1 serological equivalents in HLA Fusion upon analysis.

When the assigned results are imported in HistoTrac via the LABScreen custom utility, with the new “Import DP Serology as 2-Field Molecular” option off, the specificities are displayed as equivalents (Figure 3).

Figure 2. DPB1 assignments in HLA Fusion.

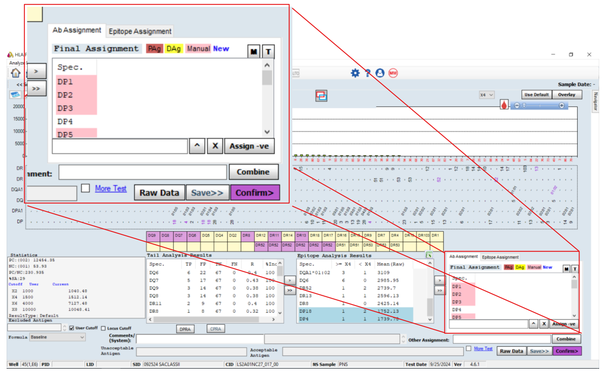
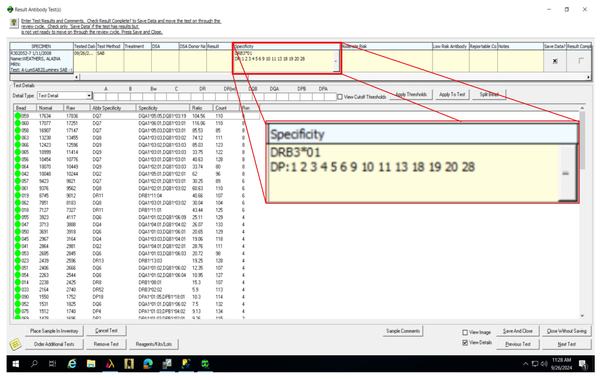
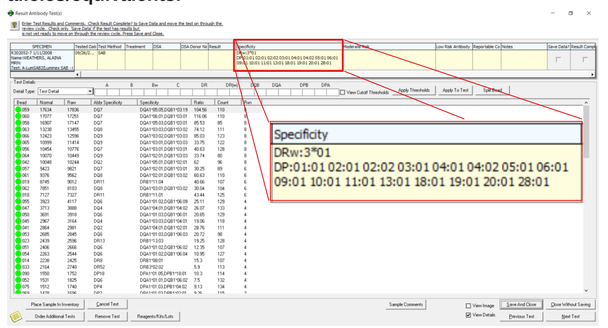


Figure 3. DPB1 serological equivalents in HistoTrac when the new “Import DP Serology as 2-Field Molecular” option is turned off.



When we turn on the new “Import DP Serology as 2-Field Molecular” option however, the specificities are displayed automatically as converted 2-Field molecular results (Figure 4).

Figure 4. DPB1 serological assignments automatically converted to molecular results in HistoTrac when the new “Import DP Serology as 2-Field Molecular” option is turned on. NOTE: The Specificity format displayed in the test code is listed as a per Locus string series representative of acceptable alleles/equivalents.



Conclusions

Using custom software solutions to automate and improve processes has long been a vision of HistoTrac. The employed solution allows laboratories to meet the current nomenclature requirement of ASHI and UNOS, automating specificity calls without manual editing.

Additionally, it aids in minimizing the UNOS API and Waitlist data errors, ensures patient UNET profiles are accurate and up to date, saving precious time.

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