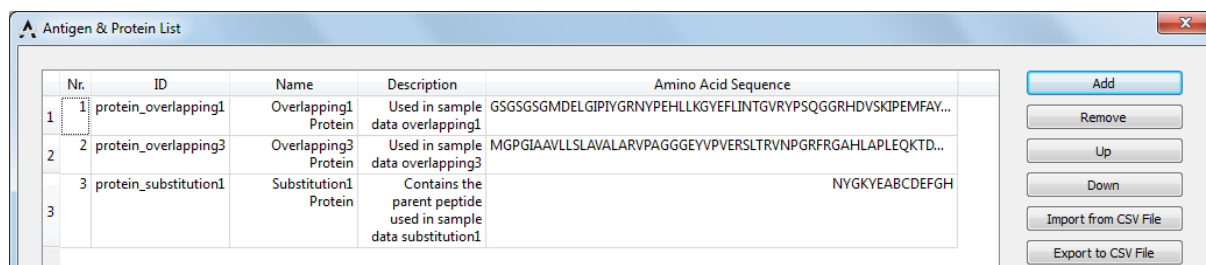# 6 Utilities

6.1 Search for Antigens and Proteins

It is helpful to know if a generated peptide is part of an antigen or a protein. PSA assists you to do that easily, for either the entire peptide array or only selected peptides. You first need to setup the list of antigens and proteins that might be related to you study. Then during quantification of peptide array data or analysis of peptide libraries, you can conveniently search for antigens or proteins that contain a peptide. The list can be easily imported and updated.

Setting up the List of Antigens and Proteins

Use the *Configurations > Antigen & Protein List* menu to launch the setup dialog (Figure 23). An antigen or a protein is stored in one row in the table. Its data is contained in five columns:

- Nr.: A numeric ordering number.
- ID: Unique identification of the item. It will be shown in the search result of a peptide if the antigen or protein contains the peptide.
- Name: The item name.
- Description: Further information about the item.
- Amino Acid Sequence: The item's sequence of amino acids.

Figure 23: List of Antigens and Proteins.

If you already have a list of antigens and/or proteins contained in a spreadsheet file, you can export that list to a CSV file and then conveniently import that list into PSA. Alternatively, you can manually add an item to your list with the *Add* button. Use the *Remove* button to delete an existing item.

Figure 24 shows an example CSV file containing a list of proteins. The CSV file format can be either *Tab delimited* or *Semicolon delimited*. This option can be chosen during the export with your spreadsheet software. The first line of the file is the header and will not be processed. PSA will import items from the second line of the CSV file. If you import another list, the new items will be appended to the current list. Please note that the current version of PSA does not check if items' ID is duplicated. Therefore, please prepare the list with unique IDs.

Figure 24: A List of Antigens and Proteins in the CSV File

You can export the current list to a CSV file for backup purpose or using that list on another computer. To do that, launch the setup dialog again and click the *Export to CSV File* button.

Please note that there are two example CSV files in the *antigenProteinList* folder in the sample data package. They contain the same list of proteins but are stored in two different formats. You can use them to test the function or as a template to create your own list.

Searching for Antigens & Proteins

In the *Imaging Results* sheet, you can perform the search for the entire array. Alternatively, in the *Peptide Library Analysis* sheet the search is only applied to selected peptides. In either cases, click on the *Find Antigen/Protein* button to start the search. The *Search for Antigen & Protein* dialog (Figure 25) determines how PSA carries out the search for a peptide:

- *Stop at the first finding*: The search is finished as soon as an antigen or a protein in the list is found containing the peptide.
- *Search for all matches*: The entire list will be scanned. The search returns the ID of *all* antigens or proteins that contain the peptide.
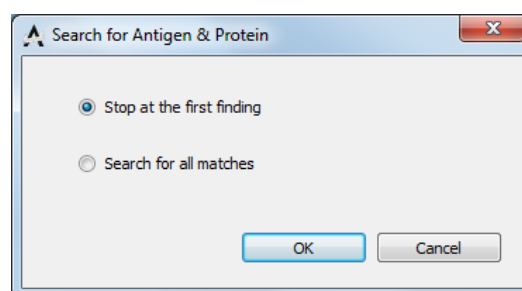

Figure 25: Search Options.

The search results are shown in the *Antigen/Protein ID* columns of the table of quantified data or the table of selected peptides. Figure 26 illustrates the latter case. You can export the table's data, including the peptide and the antigen/protein ID columns, to a CSV file.

Figure 26: Search for Antigens and Proteins.