

BIONUMERICS Tutorial: Installation and setup of the Spa typing plugin

1 Introduction

The *Spa typing plugin* offers extra functionality to BIONUMERICS to do Spa typing for *Staphylococcus aureus*. Sequences in the database can be screened for known spa repeats and types downloaded from the SpaServer, data can be submitted to the SpaServer via a synchronization process, and entries can be clustered based on the spa types. In this tutorial the installation of the *Spa typing plugin* in a new database is covered.

2 Creating a new database

To illustrate the installation and setup of the *Spa typing plugin*, we will start by creating a new, empty database.

- 1. Double-click on the BIONUMERICS icon (
- 2. In the *BIONUMERICS Startup* window, press the 🗟 button to enter the *New database* wizard.
- 3. Enter a database name, e.g. "Staphylococcus aureus".
- 4. Click <*Next*>.

A new dialog box pops up, asking whether to create a new relational database for data storage or to use an existing one.

5. Leave the default option *Create new* enabled and press < *Next*>.

The next dialog asks which database engine should be used for storing data.

6. Select the default option and press < *Finish*>.

The Main window opens with an empty database.

3 Installing the Spa-Typing plugin

1. The *Plugins* dialog box is called from the *Main* window by selecting *File* > *Install / remove plugins...* (,):

2. Select the *Spa typing plugin* from the list in the *Applications tab* (Figure 1) and press the <*Activate*> button.

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pplications	Utilities	Custom	Database Fur	ctionality			
Activate fun	ctionality f	or specific	applications.				
Salmonella i S. aureus fi HIV Resista MIRU-VNTR MLST online QIAxcel RDP RiboPrinter SNP calling Spa typing Polymorphic MLVA WGS tools wg/LST va	iunctional g ince : VNTR typ lidation	genotyping jenotyping ping		This plugin offers typing for Staphyly analysis based on submitted to the Ri	extra functionality ococcus aureus a the spa types idom/SeqNet Spa5	r to do spa- ind cluster ata can be Server.	

Figure 1: Install a plugin in the database.

The next dialog asks to confirm the installation of the *Spa typing plugin*. Installation of the plugin requires administrator privileges on the relational database.

3. Press < OK > twice to confirm the installation.

The Spa typing settings dialog box pops up (see Figure 2).

4. For this exercise, leave all settings unaltered and press < OK >.

BIONUMERICS imports the types and repeats from the Ridom/Seqnet SpaServer.

- 5. When the *Spa typing plugin* is successfully installed, a confirmation message pops up. Press < OK >.
- 6. Press < *Exit*> to close the *Plugins* dialog box.
- 7. Close and reopen the database to activate the features of the plugin.

4 The Main window after installation of the plugin

The Spa typing plugin installs itself in a menu of the BIONUMERICS software (see Figure 3).

In the *Main* window, some initialization has been done to the database with the installation of the *Spa Typing plugin*:

- The information fields specified in the *Information fields panel* of the *Spa typing settings* dialog box are present in the *Database entries* panel.
- The *Experiment types* panel lists the experiment types. BIONUMERICS has automatically created a sequence type called **Spa-typing** and a character type called **Spa-repsuc** upon installation of the plugin.

		ſ	
General Spa typing plu	ugin settings. Normally NO changes are requ	uired!	
Experiment Setting	gs		
Repeat succession:	Spa-repsuc		
Sequence	Spa-typing		
Start target:	RCAMCAAAA		
Stop target:	TAYATGTCGT		
	Advanced assembly settings		
Allow gaps	(2.4) 2		
Allow gaps Max # of mismatches	(2-4): 2		
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Figure 2: Spa typing settings.

🖆 Spa typing tutorials - BioNumerics									
File Edit Database Analysis	Spa-Typing Scripts Window Help								
🕞 글 🔳 🕫 🕚	Assign Spa types								
Experiment types	Match Spa types								
	Settings	(
# Name	Browse repeats/types	Mor							
1 Spa-typing	Update repeats/types (SpaServer)								
2 Spa-repsuc	Synchronize with SpaServer								
	SpaServer synchronization settings								
Entry fields Database design									

Figure 3: The Spa-Typing menu-items.

1. To call the *Spa typing settings* dialog box again from the *Main* window, select *Spa-Typing* > *Settings*. Press <*OK* > to close the dialog.

The lists of Spa repeats and Spa types, downloaded from the SpaServer, can be queried by the user.

- 2. Select *Spa-Typing* > *Browse repeats/types* in the *Main* window.
- 3. Select *repeats/types* in the *Repeats/Types panel* (see Figure 4) and press the <*Find*> button to look for a repeat/type.
- 4. Close the dialog with the *<Close*> button.
- 5. The list of known repeats and types can be updated with the command *Spa-Typing* > *Update repeats/types (SpaServer)*.



Figure 4: Search for repeats or types.



You can perform analyses without being connected to the internet, but you will be unable to update the list of known repeats and types.