

**Materials List for:**

# Monitoring Intraspecies Competition in a Bacterial Cell Population by Cocultivation of Fluorescently Labelled Strains

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## Materials

| Name                                                    | Company                                       | Catalog Number              | Comments |
|---------------------------------------------------------|-----------------------------------------------|-----------------------------|----------|
| (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>         | Roth, Germany                                 | 3746                        |          |
| Agar                                                    | Difco, USA                                    | 214010                      |          |
| Ammonium ferric citrate (CAF)                           | Sigma-Aldrich, Germany                        | 9714                        |          |
| CaCl <sub>2</sub>                                       | Roth, Germany                                 | 5239                        |          |
| Glucose                                                 | Applichem, Germany                            | A3617                       |          |
| Glycerol                                                | Roth, Germany                                 | 4043                        |          |
| K <sub>2</sub> HPO <sub>4</sub> •3H <sub>2</sub> O      | Roth, Germany                                 | 6878                        |          |
| KCl                                                     | Applichem, Germany                            | A3582                       |          |
| KH <sub>2</sub> PO <sub>4</sub>                         | Roth, Germany                                 | 3904                        |          |
| KOH                                                     | Roth, Germany                                 | 6751                        |          |
| MgSO <sub>4</sub> •7H <sub>2</sub> O                    | Roth, Germany                                 | P027                        |          |
| MnCl <sub>2</sub>                                       | Roth, Germany                                 | T881                        |          |
| MnSO <sub>4</sub> •4H <sub>2</sub> O                    | Merck Millipore, Germany                      | 102786                      |          |
| NaCl                                                    | Roth, Germany                                 | 9265                        |          |
| Nutrient broth                                          | Roth, Germany                                 | X929                        |          |
| Potassium glutamate                                     | Applichem, Germany                            | A3712                       |          |
| Tryptone                                                | Roth, Germany                                 | 8952                        |          |
| Tryptophan                                              | Applichem, Germany                            | A3445                       |          |
| Yeast extract                                           | Roth, Germany                                 | 2363                        |          |
| 1.5 ml Reaction tubes                                   | Sarstedt, Germany                             | 72,690,001                  |          |
| 2.0 ml Reaction tubes                                   | Sarstedt, Germany                             | 72,691                      |          |
| 15 ml Plastic tubes with screw cap                      | Sarstedt, Germany                             | 62,554,001                  |          |
| Petri dishes                                            | Sarstedt, Germany                             | 82.1473                     |          |
| 1.5 ml Polystyrene cuvettes                             | Sarstedt, Germany                             | 67,742                      |          |
| 15 ml Glass culture tubes                               | Brand, Germany                                | 7790 22                     |          |
| 100 ml Shake flasks with aluminium caps                 | Brand, Germany                                | 928 24                      |          |
| Sterile 10 ml glass pipettes                            | Brand, Germany                                | 278 23                      |          |
| Incubator (28 and 37 °C)                                | New Brunswick                                 | M1282-0012                  |          |
| Standard pipette set (2-20 µl, 10-100 µl, 100-1,000 µl) | Eppendorf, Germany                            | 4910 000.034, 4910 000.042, |          |
| Table top centrifuge for 1.5 and 2 ml reaction tubes    | Thermo Scientific, Heraeus Fresco 21, Germany | 75002425                    |          |
| Table top centrifuge for 15 ml plastic tubes            | Heraeus Biofuge Primo R, Germany              | 75005440                    |          |

|                                                             |                                                  |                           |                                         |
|-------------------------------------------------------------|--------------------------------------------------|---------------------------|-----------------------------------------|
| Standard spectrophotometer                                  | Amersham Biosciences Ultrospec 2100 pro, Germany | 80-2112-21                |                                         |
| Stereofluorescence microscope                               | Zeiss SteREO Lumar V12, Germany                  | 495008-0009-000           |                                         |
| Freezer (-20 and -80 °C)                                    | -                                                | -                         |                                         |
| Fridge (4 °C)                                               | -                                                | -                         |                                         |
| Autoclave                                                   | Zirbus, LTA 2x3x4, Germany                       | -                         |                                         |
| pH meter                                                    | pH-meter 766, Calimatic, Knick, Germany          | 766                       |                                         |
| Vortex                                                      | Vortex 3, IKA, Germany                           | 3340000                   |                                         |
| Balance                                                     | CP2202S, Sartorius, Germany                      | replaced by               |                                         |
| Black pen (permanent marker)                                | Staedler, Germany                                | 317-9                     |                                         |
| Powerpoint program                                          | Microsoft, USA                                   | -                         |                                         |
| Office Excel program                                        | Microsoft, USA                                   | -                         | Program for data processing             |
| Adobe Photoshop CS5                                         | Adobe, USA                                       | replaced by CS6, download | Computer program for image processing   |
| Computer                                                    | PC or Mac                                        | -                         |                                         |
| ZEN pro 2011 software for the stereofluorescence microscope | Zeiss, Germany                                   | 410135 1002 110           | AxioCam MRc Rev. Obtained through Zeiss |

#### Specific solution recipes

##### SP Medium

|                                                                         |  |  |                                |
|-------------------------------------------------------------------------|--|--|--------------------------------|
| 8 g Nutrient broth                                                      |  |  |                                |
| 0.25 mg MgSO <sub>4</sub> •7H <sub>2</sub> O                            |  |  |                                |
| 1 g KCl                                                                 |  |  |                                |
| 15 g agar for solid SP medium                                           |  |  | if required                    |
| add 1 L with H <sub>2</sub> O                                           |  |  | autoclave for 20 min at 121 °C |
| 1 ml CaCl <sub>2</sub> (0.5 M), sterilized by filtration                |  |  |                                |
| 1 ml MnCl <sub>2</sub> (10 mM), sterilized by filtration                |  |  |                                |
| 2 ml ammonium ferric citrate (CAF, 2.2 mg/ml), sterilized by filtration |  |  |                                |

##### LB Medium

|                               |  |  |                                |
|-------------------------------|--|--|--------------------------------|
| 10 g Tryptone                 |  |  |                                |
| 5 g Yeast extract             |  |  |                                |
| 10 g NaCl                     |  |  |                                |
| 15 g agar for solid LB medium |  |  | if required                    |
| add 1 L with H <sub>2</sub> O |  |  | autoclave for 20 min at 121 °C |

##### C-Glc Minimal Medium

|                                                                          |  |  |                                 |
|--------------------------------------------------------------------------|--|--|---------------------------------|
| 200 ml 5 x C salts                                                       |  |  |                                 |
| 10 ml L-Tryptophan (5 mg/ml), sterilized by filtration                   |  |  |                                 |
| 10 ml ammonium ferric citrate (CAF, 2.2 mg/ml), sterilized by filtration |  |  |                                 |
| 10 ml III' salts                                                         |  |  |                                 |
| 25 ml Glucose (20%)                                                      |  |  | autoclaved for 20 min at 121 °C |
| add 1 L with sterile H <sub>2</sub> O                                    |  |  |                                 |

##### CE-Glc Minimal Medium

|                                                                                         |                              |  |                                |
|-----------------------------------------------------------------------------------------|------------------------------|--|--------------------------------|
| 200 ml 5 x C salts                                                                      |                              |  |                                |
| 10 ml L-Tryptophan (5 mg/ml),<br>sterilized by filtration                               |                              |  |                                |
| 10 ml ammonium ferric citrate<br>(CAF, 2.2 mg/ml), sterilized by<br>filtration          |                              |  |                                |
| 10 ml III' salts                                                                        |                              |  |                                |
| 20 ml Glutamate (40%)                                                                   |                              |  |                                |
| 25 ml Glucose (20%), autoclaved<br>for 20 min at 121 °C                                 |                              |  |                                |
| add 1 L with sterile H <sub>2</sub> O                                                   |                              |  |                                |
| 5 x C salts                                                                             |                              |  |                                |
| 20 g KH <sub>2</sub> PO <sub>4</sub>                                                    |                              |  |                                |
| 80 g K <sub>2</sub> HPO <sub>4</sub> •3H <sub>2</sub> O                                 |                              |  |                                |
| 16.5 g (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>                                  |                              |  |                                |
| add 1 L with sterile H <sub>2</sub> O                                                   |                              |  | autoclave for 20 min at 121 °C |
| III' salts                                                                              |                              |  |                                |
| 0.232 g MnSO <sub>4</sub> •4H <sub>2</sub> O                                            |                              |  |                                |
| 12.3 g MgSO <sub>4</sub> •7H <sub>2</sub> O                                             |                              |  |                                |
| add 1 L with sterile H <sub>2</sub> O, autoclave<br>for 20 min at 121 °C                |                              |  |                                |
| 40% Glutamate solution                                                                  |                              |  |                                |
| 200 g L-Glutamic acid                                                                   |                              |  |                                |
| adjust the pH to 7.0 by adding<br>approximately 80 g KOH                                |                              |  |                                |
| add 0.5 L with sterile H <sub>2</sub> O                                                 |                              |  | autoclave for 20 min at 121 °C |
| <b>0.9% Saline (NaCl) Solution</b>                                                      |                              |  |                                |
| add 1 L with sterile H <sub>2</sub> O                                                   |                              |  | autoclave for 20 min at 121 °C |
| 50% Glycerol solution                                                                   |                              |  |                                |
| 295 ml Glycerol (87%)                                                                   |                              |  |                                |
| add 0.5 L with sterile H <sub>2</sub> O                                                 |                              |  | autoclave for 20 min at 121 °C |
| Bacteria (All strains are based on the <i>Bacillus subtilis</i> strain 168)             |                              |  |                                |
| <i>Bacillus subtilis</i> BP40 (rocG <sup>+</sup><br>gudB <sup>CR</sup> amyE::PgudB-yfp) | Laboratory strain collection |  |                                |
| <i>Bacillus subtilis</i> BP41 (rocG <sup>+</sup><br>gudB <sup>CR</sup> amyE::PgudB-cfp) |                              |  |                                |
| <i>Bacillus subtilis</i> BP52 (rocG <sup>+</sup> gudB <sup>+</sup><br>amyE::PgudB-cfp)  |                              |  |                                |
| <i>Bacillus subtilis</i> BP156 (rocG <sup>+</sup><br>gudB <sup>+</sup> amyE::PgudB-yfp) |                              |  |                                |