

**Supplemental Table 1**

|                                           | <b>Munich</b>                                       | <b>Regensburg</b>                                        |
|-------------------------------------------|-----------------------------------------------------|----------------------------------------------------------|
| <b>Intestinal decontamination</b>         | -                                                   | Rifaximin                                                |
| <b>Pneumocystis jirovecii prophylaxis</b> | Trimethoprim/<br>Sulfamethoxazole                   | Trimethoprim/<br>Sulfamethoxazole                        |
| <b>Antifungal prophylaxis</b>             | Micafungin; after<br>regeneration: Posaconazole     | Fluconazole; in GvHD/other<br>risk factors: Posaconazole |
| <b>Cytomegalovirus prophylaxis</b>        | Letermovir                                          | Letermovir                                               |
| <b>Herpesvirus prophylaxis</b>            | Valacyclovir                                        | Acyclovir                                                |
| <b>Antibiotics - 1st line</b>             | Piperacillin/Tazobactam ±<br>Vancomycin/Teicoplanin | Piperacillin/Tazobactam ±<br>Vancomycin/Teicoplanin      |
| <b>Antibiotics - 2nd line</b>             | Meropenem ±<br>Vancomycin/Linezolid                 | Meropenem ±<br>Vancomycin/Teicoplanin                    |
| <b>Antibiotics - other</b>                |                                                     | Ciprofloxacin, Ceftazidime,<br>Linezolid                 |
| <b>Antimycotics</b>                       | liposomal Amphotericin B,<br>Caspofungin            | liposomal Amphotericin B,<br>Caspofungin, Isavuconazol   |
| <b>Virostatics</b>                        | -                                                   | Foscavir, Ganciclovir,<br>Valganciclovir                 |

**Supplemental Table 2**

|                    | <b>Deaths</b> | <b>Patients</b> | <b>Univariable<br/>analysis</b> | <b>Multivariable<br/>analysis</b> |
|--------------------|---------------|-----------------|---------------------------------|-----------------------------------|
|                    | <b>No.</b>    | <b>No.</b>      | <b>Hazard ratio (95 % CI)</b>   |                                   |
| <b>Continuous</b>  | 12            | 68              | 0.75 (0.60-0.96)                | 0.79 (0.64-0.97)                  |
| <b>Binary low</b>  | 11            | 35              | Reference                       | Reference                         |
| <b>Binary high</b> | 1             | 33              | 0.08 (0.01-0.63)                | 0.08 (0.01-0.63)                  |

Multivariable models are adjusted for age, intensity of conditioning regimen and graft source. CI denotes confidence interval.

**Supplemental Table 3**

|                                    | <b>Munich</b> | <b>Regensburg</b> |
|------------------------------------|---------------|-------------------|
| <b>AB therapy - no. (%)</b>        | 25 (100)      | 50 (94)           |
| <b>AB timing - no. (%)</b>         |               |                   |
| never                              | 0 (0)         | 3 (6)             |
| early (during conditioning)        | 3 (12)        | 13 (25)           |
| regular (at/after transplantation) | 22 (88)       | 37 (70)           |
| <b>AF therapy - no. (%)</b>        | 13 (52)       | 22 (42)           |
| <b>AV therapy - no. (%)</b>        | 0 (0)         | 8 (15)            |

AB denotes patients who received intravenous therapy with broad-spectrum antibiotics (including Piperacillin/Tazobactam, Meropenem, Ciprofloxacin, Ceftazidim), AF antifungal (including liposomal Amphotericin B, Isavuconazole, Caspofungin), AV antiviral (including Foscavir, Ganciclovir, Valganciclovir).

**Supplemental Table 4**

|                                                                     | <b>Patient 1</b>                                                                          | <b>Patient 2</b>                                                                                               | <b>Patient 3</b>                                                    |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| <b>Bacteriome diversity</b>                                         | high                                                                                      | low                                                                                                            | low                                                                 |
| <b>Age (years)</b>                                                  | 52                                                                                        | 70                                                                                                             | 59                                                                  |
| <b>Diagnosis</b>                                                    | MPN                                                                                       | AML                                                                                                            | MDS-EB2<br>IPSS intermediate risk, r-IPSS high risk, WPSS high risk |
| <b>Donor</b>                                                        | HLA-A-mismatched unrelated                                                                | HLA matched unrelated                                                                                          | HLA-C-mismatched unrelated                                          |
| <b>Stem cell source</b>                                             | peripheral blood                                                                          | peripheral blood                                                                                               | peripheral blood                                                    |
| <b>Conditioning regimen</b>                                         | reduced intensity (fludarabine/treosulfan)                                                | reduced intensity (fludarabine, thiotepe, busulfan)                                                            | reduced intensity (fludarabine, treosulfan)                         |
| <b>GI-GvHD (day of onset in relation to transplantation)</b>        | no                                                                                        | mild (day 36)                                                                                                  | severe (day 60)                                                     |
| <b>Response to steroids</b>                                         | -                                                                                         | resistant                                                                                                      | resistant                                                           |
| <b>Death (reason; day in relation to transplantation)</b>           | no                                                                                        | yes (relapse; day 87)                                                                                          | no                                                                  |
| <b>Infections (day of diagnosis in relation to transplantation)</b> | bacteraemia - <i>Streptococcus viridans</i> (day 10); cystitis - <i>BK-virus</i> (day 13) | central venous catheter infection - <i>Staphylococcus epidermidis</i> (day -3 and day 1); neck abscess (day 9) | bacteraemia – <i>Campylobacter jejuni</i> (day 300)                 |

**Supplemental Table 5**

| <b>Pathogen</b>                  | <b>Result</b>                           |
|----------------------------------|-----------------------------------------|
| EHEC/EPEC                        | stx1 / stx2 negative                    |
| EHEC/EPEC                        | ipaH negative                           |
| EHEC/EPEC                        | eae negative                            |
| ETEC/EIEC                        | LT negative                             |
| ETEC/EIEC                        | ST negative                             |
| ETEC/EIEC                        | ipaH negative                           |
| EAEC                             | <i>EAEC</i> negative                    |
| Norovirus                        | <i>Norovirus</i> negative               |
| Rotavirus                        | <i>Rotavirus</i> negative               |
| Adenovirus                       | <i>Adenovirus</i> negative              |
| Astrovirus                       | <i>Astrovirus</i> negative              |
| Enterovirus                      | <i>Enterovirus</i> negative             |
| Sapovirus                        | <i>Sapovirus</i> negative               |
| <i>Yersinia enterocolitica</i>   | <i>Yersinia enterocolitica</i> negative |
| <i>Campylobacter</i> spp.        | <i>Campylobacter</i> low positive       |
| <i>Shigella</i> spp./EIEC        | <i>Shigella</i> / <i>EIEC</i> negative  |
| <i>Salmonella</i> spp.           | <i>Salmonella</i> negative              |
| <i>Aeromonas</i> spp.            | <i>Aeromonas</i> negative               |
| <i>Entamoeba histolytica</i>     | <i>E. histolytica</i> negative          |
| <i>Giardia</i> spp.              | <i>Giardia</i> negative                 |
| <i>Dientamoeba</i> spp           | <i>Dientamoeba</i> negative             |
| <i>Cryptosporidium</i> spp.      | <i>Cryptosporidium</i> spp. negative    |
| <i>Blastocystis</i> spp.         | <i>Blastocystis</i> negative            |
| <i>Helicobacter</i> spp.         | <i>H. pylori</i> negative               |
| <i>Listeria monocytogenes</i>    | <i>L. monocytogenes</i> negative        |
| <i>Plesiomonas</i> spp.          | <i>Plesiomonas</i> negative             |
| <i>Encephalitozoon</i> spp.      | <i>Encephalitozoon</i> negative         |
| <i>Enterocytozoon bieneusi</i>   | <i>Enterocytozoon bieneusi</i> negative |
| Enterococcus Van A               | negative                                |
| Enterococcus Van B               | negative                                |
| <i>Clostridium difficile</i>     | negative                                |
| JC/BK (Polyomavirus)             | negative                                |
| Sarbecovirus E-Gene              | negative                                |
| <i>Enterobius vermicularis</i>   | negative                                |
| <i>Necator americanus</i>        | negative                                |
| <i>Strongyloides stercoralis</i> | negative                                |
| <i>Schistosoma</i>               | negative                                |

|                                            |          |
|--------------------------------------------|----------|
| Ancylostoma duodenale                      | negative |
| Hymenolepis nana                           | negative |
| Ascaris lumbricoides                       | negative |
| Carbapenemase-Gene (Oxa-48, VIM, KPC, NDM) | negative |

**Supplemental Table 6**

| Epitope         | Conjugate | Clone      | Species | Ig    | Company           | Cat number | Dilution            | Incubation | Method               |
|-----------------|-----------|------------|---------|-------|-------------------|------------|---------------------|------------|----------------------|
| CD3             | -         | SP7        | rabbit  | IgG   | Thermo Scientific | RM-9107-S1 | 1:150               | o.n. 4°C   | ChipCytometry        |
| Pan-Cytokeratin | AF488     | C11        | mouse   | IgG1  | BioLegend         | 628608     | 1:100               | o.n. 4°C   | ChipCytometry        |
| CD4             | AF488     | polyclonal | goat    | IgG   | R&D systems       | FAB8165G   | 1:100               | o.n. 4°C   | ChipCytometry        |
| Vimentin        | AF488     | O91D3      | mouse   | IgG2a | BioLegend         | 677809     | 1:300               | o.n. 4°C   | ChipCytometry        |
| Vinculin        | AF488     | 7F9        | mouse   | IgG2a | Life Technologies | 53-9777-80 | 1:200               | o.n. 4°C   | ChipCytometry        |
| FoxP3           | PE        | 236A/E7    | mouse   | IgG1  | eBioscience       | 12-4777-42 | 1:30                | o.n. 4°C   | ChipCytometry        |
| CD8             | PE        | C8/144B    | mouse   | IgG1  | SantaCruz         | sc53212 PE | 1:50                | o.n. 4°C   | ChipCytometry        |
| Rabbit          | PE        | Poly4064   | donkey  | IgG   | Biolegend         | 406421     | 1:300               | 2 h RT     | ChipCytometry        |
| E-Cadherin      | PE        | 24E10      | rabbit  | IgG   | Cell Signaling    | 7559S      | 1:300               | o.n. 4°C   | ChipCytometry        |
| Hoechst 33342   | BUV395    | -          | -       | -     | Thermo Scientific | H3570      | 1:5x10 <sup>4</sup> | 5 min RT   | ChipCytometry        |
| CD3             | -         | MRQ39      | rabbit  | IgG1  | CellMarque        | 103R-95    | 1:500               | -          | Immunohistochemistry |
| Ki67            | -         | MIB1       | mouse   | IgG1  | Agilent           | M724001    | 01:50               | -          | Immunohistochemistry |