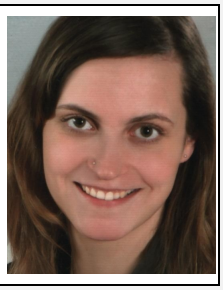
# ImmunoTools IT-Box-139 Award 2012



**Claudia Schlundt**

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## Beneficial and unfavourable immune cells in fracture healing

Delayed or impaired healing of a bone fracture is still a problem in today's society leading to the application of expensive and long-term therapeutic treatment strategies. One critical step in the healing process is the early phase including the hematoma formation and the following inflammation in the fracture region. Results from earlier studies suggest that different immune cell subpopulations have opposite effects on the healing outcome but the real key players are not yet identified. In my PhD project, realized at Julius Wolff Institut, Charité Berlin, I will investigate the impact of distinct immune cell subsets on the fracture healing process in order to identify beneficial and/or unfavourable cells. In a consecutive therapeutical approach, we plan to target selectively immune cell subpopulations in order to enhance fracture healing.

The analyses will be performed primarily in an already well established murine osteotomy model. In addition, within the framework of a cooperation project, we will analyse human bone fracture hematoma to verify/confirm our results obtained in the mouse model in patients. Samples of the human fracture hematoma will be continuously harvested over the healing process. The investigation of the immune cell subset composition in the fracture hematoma at different time points of the healing process will be done by single cell staining and measured in a flow cytometer. I will discriminate, among others, B- and T-cells (using the marker i. e. CD3, CD19, CD21), T-cell subsets (i. e. CD4, CD8 and CD25), naive and activated (CD45RA/RO, CD25) as well as effector and memory T-cells (i. e. CD62L) and macrophages/monocytes (i. e. CD14, CD16).

The overall aim is to better understand the healing process, especially the events during the inflammatory phase in order to develop treatment strategies to specifically target the "bad guys" of the immune system or to support the favourable ones. The pursuit of the patients during the whole healing phase makes it possible to analyse the distribution of distinct immune cell subpopulations with regard to the time point of the healing process (early or late phase) and the healing outcome (bad or good healer). With the antibodies within the Immunotools IT-Box 139, I will have the possibility to include more parameters in my analyses and therefore to realise the planned experiments in a much wider and more detailed extent.

**ImmunoTools** IT-Box-139 for Claudia Schlundt include 100 antibodies

FITC - conjugated anti-human CD1a, CD3, CD4, CD5, CD6, CD7, CD8, CD14, CD15, CD16, CD19, CD21, CD25, CD29, CD35, CD36, CD41a, CD42b, CD45, CD45RA, CD45RB, CD45RO, CD49d, CD53, CD57, CD61, CD63, CD80, CD86, HLA-DR, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE - conjugated anti-human CD3, CD4, CD8, CD11b, CD15, CD14, CD18, CD19, CD20, CD21, CD22, CD31, CD33, CD38, CD40, CD45, CD45RB, CD50, CD52, CD56, CD58, CD62p, CD72, CD95, CD105, CD147, CD177, CD235a, HLA-ABC, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE/Dy647 -tandem conjugated anti-human CD3, CD4, CD8, CD14, CD19, CD20, CD25, CD54

APC -conjugated anti-human CD2, CD3, CD4, CD8, CD10, CD11a, CD11c, CD14, CD16, CD27, CD37, CD42b, CD44, CD45, CD59, CD62L, CD69, CD71, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

DETAILS