

## BIH & MDC Focus Area Translational Vascular Biomedicine – Focus Groups

Based on the results of the kickoff workshop on December 10, 2019, the Steering Committee has defined three overarching goals for the Focus Area *Translational Vascular Biomedicine* that will be further refined and developed in dedicated focus groups. The focus groups are open to interested scientists and clinicians from BIH/Charité/MDC with a commitment to research in vascular biology. Regular meetings (e.g., monthly) of the focus groups will be established.

### Focus Group 2: Reverse Vascular Remodeling to Improve Organ Dysfunction

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#### Relevant diseases and unmet clinical needs:

The focus group addresses clinically relevant scenarios of maladaptive vascular remodeling with the declared goal to identify and exploit mechanisms of reverse remodeling, ideally capitalizing on natural models of such processes. Maladaptive vascular remodeling is associated with cardiovascular diseases with high incidence and morbidity/mortality including arterial hypertension, pulmonary hypertension, atherosclerosis, or vascular rarefaction in renal insufficiency. Maladaptive vascular remodeling contributes critically to the pathology and progression of such diseases by affecting first vascular, then organ structure and function, and ultimately, promoting their systemic manifestation. Yet, despite their clinical relevance, there are presently no targeted pharmacological strategies available to reverse such remodeling processes. The focus group will specifically target this unmet clinical need by systematically compiling, generating and analyzing evidence for and mechanisms of reverse remodeling and vascular plasticity in clinical scenarios or preclinical models.

#### Goals:

##### Specific goals:

1. Systematic compilation of existing evidence for reversibility in clinical scenarios or preclinical models
2. Comprehensive mechanistic analysis of reverse remodeling processes and their regulation
3. Exploitation of this knowledge for new therapeutic intervention points

##### Obstacles:

1. Limited information on scenarios, characteristics, and mechanisms of reverse vascular remodeling
2. Limited utilization of naturally occurring reverse remodeling processes as biological models

##### Solutions:

1. Interdisciplinary, across-organ approach for better understanding of reverse remodeling
2. Identification, use and optimization of naturally occurring reverse remodeling processes

**Milestones:**

Short-term milestones:

1. Systematic across-organ review on reverse vascular remodeling
2. Identification of and focus/consensus on appropriate biological models for reverse remodeling

Long-term milestones:

1. Mechanistic analysis of biological models for reverse remodeling
2. Transformation of mechanistic analyses into novel therapeutic concepts
3. Testing of novel therapeutic concepts in relevant preclinical models
4. Ultimately, first-in-man clinical trials for reverse remodeling in cardiovascular disease