

<b>High-Throughput Technologies</b>					
<b>Kennnummer</b>	<b>Workload</b> 180 Std.	<b>Credits/LP</b> 6	<b>Studiensemester</b> 2	<b>Häufigkeit des Angebots</b> Jedes Semester	<b>Dauer</b> 1 Semester
<b>1</b>	<b>Lehrveranstaltungen</b> a) Bioanalytical Surfaces b) Epigenetics	<b>Sprache</b> a) English b) English	<b>Kontaktzeit</b> a) 22,5 Std. b) 22,5 Std.	<b>Selbststudium</b> a) 67,5 Std. b) 67,5 Std.	<b>Geplante Gruppengröße</b> a) 15 b) 15
<b>2</b>	<p><b>Lernergebnisse/Kompetenzen</b> After successful participation in the module the students ...</p> <p><b>Verständnis (2)</b> ... .. get knowledge of different techniques for characterization of epigenetic modifications. ... .. get an overview of different immobilization strategies for biomolecules on surfaces/particles (micro/nanoparticles). ... .. get knowledge about the definition and principles of epigenetics. ... .. get knowledge of different characterization techniques using functionalized surfaces/particles (micro/nanoparticles). ... .. get knowledge of different substrate surface/particles (micro/nanoparticles) chemistries, their possible application areas, advantages and disadvantages. ... .. get knowledge of the involvement of epigenetic modifications in different physiological and pathophysiological processes. ... .. understand the major differences in solid support materials. ... .. understand the molecular mechanisms behind epigenetic modifications.</p> <p><b>Anwendung (3)</b> ... .. choose appropriate methods for analysis of defined epigenetic modifications. ... .. choose appropriate methods for generation, characterization, and application of defined bioanalytical surfaces/particles (micro/nanoparticles).</p> <p><b>Evaluation / Bewertung (6)</b> ... .. evaluate the strength and weaknesses of published studies with respect to the methods used. ... .. evaluate the strengths, weaknesses, and possible application areas of published bioanalytical surfaces/particles (micro/nanoparticles).</p>				
<b>3</b>	<p><b>Inhalte</b> a) Overview on different surface/particles (micro/nanoparticles) chemistries used for generation of bioanalytical surfaces, Overview of different state-of-the-art-methods for chemical immobilization of biomolecules on surfaces/particles</p>				

	<p>(micro/nanoparticles), possible characterization techniques for assessment of surface functionalization, examples for applications of functionalized surfaces for bioanalytical applications, e.g., Microarrays, Lateral Flow Assays etc.</p> <p>b) Overview on the definition and principles of epigenetics, the molecular mechanisms behind epigenetic modifications and their involvement in (patho-)physiological processes, methods for assessment of epigenetic modifications, e.g, Bisulfite-Sequencing, MeDIP, ChIP, etc.</p>
<b>4</b>	<p><b>Lehrformen</b></p> <p>a) Seminar</p> <p>b) Vorlesung</p>
<b>5</b>	<p><b>Teilnahmevoraussetzungen</b></p> <p>Knowledge in biology, molecular biology, biochemistry and instrumental analytics.</p>
<b>6</b>	<p><b>Prüfungsformen</b></p> <p>a) Prüfungsleistung 1sbL (Laborarbeit) (3 LP)</p> <p>b) Prüfungsleistung 1K (Klausur) (3 LP)</p>
<b>7</b>	<p><b>Verwendung des Moduls</b></p> <p>Precision Medicine Diagnostics M.Sc. (PMD)</p>
<b>8</b>	<p><b>Modulbeauftragte/r und hauptamtlich Lehrende</b></p>
<b>9</b>	<p><b>Literatur</b></p> <p>a) Greg T. Hermanson (2013), Bioconjugate Techniques, Academic Press, Third edition</p> <p>b) A. Goldberg, C. Allis, E. Bernstein (2007), Epigenetics: A Landscape Takes Shape, Cell, 128, 635-638</p> <p>U. Deichmann, Epigenetics: The origin and evolution of a fashionable topic, Developmental Biology, 416, 249-254</p>