

Publication

(Strept)avidin as Host for Biotinylated Coordination Complexes: Stability, Chiral Discrimination, and Cooperativity

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 116744**Author(s)** Loosli, Andreas; Rusbandi, Untung Edy; Gradinaru, Julieta; Bernauer, Klaus; Schlaepfer, Carl Wilhelm; Meyer, Michel; Mazurek, Sylwester; Novic, Marjana; Ward, Thomas R.**Author(s) at UniBasel** [Ward, Thomas R.](#) ;**Year** 2006**Title** (Strept)avidin as Host for Biotinylated Coordination Complexes: Stability, Chiral Discrimination, and Cooperativity**Journal** Inorganic Chemistry**Volume** 45**Number** 2**Pages / Article-Number** 660-8

Keywords Avidins Role: PEP (Physical, engineering or chemical process), PRP (Properties), PYP (Physical process), PROC (Process) (assocn. consts. with ruthenium bipyridine biotinylated enantiomeric complexes); Formation constant (assocn.; of ruthenium bipyridine biotinylated enantiomeric complexes with avidin and streptavidin); stability const ruthenium bipyridine biotinylated complex avidin streptavidin; ruthenium bipyridine biotinylated complex prepn assocn avidin streptavidin

Incorporation of a biotinylated ruthenium tris(bipyridine) $[\text{Ru}(\text{bpy})_2(\text{Biot-bpy})]^{2+}$ (1) in either avidin or streptavidin(strept)avidin can be conveniently followed by circular dichroism spectroscopy. To determine the stepwise association constants, cooperativity, and chiral discrimination properties, diastereopure (Δ and Δ)-1 species were synthesized and incorporated in tetrameric (strept)avidin to afford (Δ - $[\text{Ru}(\text{bpy})_2(\text{Biot-bpy})]^{2+}$) \times avidin, (Δ - $[\text{Ru}(\text{bpy})_2(\text{Biot-bpy})]^{2+}$) \times avidin, (Δ - $[\text{Ru}(\text{bpy})_2(\text{Biot-bpy})]^{2+}$) \times streptavidin, and (Δ - $[\text{Ru}(\text{bpy})_2(\text{Biot-bpy})]^{2+}$) \times streptavidin ($x = 1-4$). For these four systems, the overall stability constants are $\log \beta_4 = 28.6, 30.3, 36.2,$ and 36.4 , respectively. Critical analysis of the CD titrations data suggests a strong cooperativity between the first and the second binding event ($x = 1, 2$) and a pronounced difference in affinity between avidin and streptavidin for the dicationic guest 1 as well as modest enantiodiscrimination properties with avidin as host.

Publisher American Chemical Society**ISSN/ISBN** 0020-1669 ; 1520-510X**edoc-URL** <http://edoc.unibas.ch/dok/A5254460>**Full Text on edoc** No;**Digital Object Identifier DOI** 10.1021/ic051405t**PubMed ID** <http://www.ncbi.nlm.nih.gov/pubmed/16411701>**Document type (ISI)** Journal Article