## Accepted Manuscript

Global existence and boundedness in a chemotaxis—haptotaxis system with signal-dependent sensitivity

Masaaki Mizukami, Hirohiko Otsuka, Tomomi Yokota

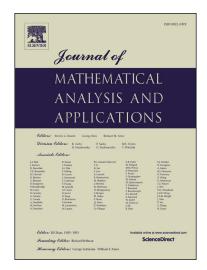
PII: S0022-247X(18)30292-0

DOI: https://doi.org/10.1016/j.jmaa.2018.04.002

Reference: YJMAA 22156

To appear in: Journal of Mathematical Analysis and Applications

Received date: 10 November 2017



Please cite this article in press as: M. Mizukami et al., Global existence and boundedness in a chemotaxis—haptotaxis system with signal-dependent sensitivity, *J. Math. Anal. Appl.* (2018), https://doi.org/10.1016/j.jmaa.2018.04.002

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

### **ACCEPTED MANUSCRIPT**

## Global existence and boundedness in a chemotaxis-haptotaxis system with signal-dependent sensitivity

#### Masaaki Mizukami\*

Department of Mathematics, Tokyo University of Science 1-3, Kagurazaka, Shinjuku-ku, Tokyo 162-8601, Japan masaaki.mizukami.math@gmail.com

#### Hirohiko Otsuka

Department of Mathematics, Tokyo University of Science 1-3, Kagurazaka, Shinjuku-ku, Tokyo 162-8601, Japan hirohiko.otsuka954@gmail.com

## Tomomi Yokota<sup>†‡</sup>

Department of Mathematics, Tokyo University of Science 1-3, Kagurazaka, Shinjuku-ku, Tokyo 162-8601, Japan yokota@rs.kagu.tus.ac.jp

#### April 5, 2018

**Abstract.** This paper deals with the chemotaxis-haptotaxis system with signal-dependent sensitivity

$$\begin{cases} u_t = \Delta u - \nabla \cdot (\chi(v)u\nabla v) - \xi\nabla \cdot (u\nabla w) + \mu u(1-u-w), & x \in \Omega, \ t > 0, \\ v_t = \Delta v - v + u, & x \in \Omega, \ t > 0, \\ w_t = -vw, & x \in \Omega, \ t > 0 \end{cases}$$

under homogeneous Neumann boundary conditions and initial conditions, where  $\Omega \subset \mathbb{R}^n$   $(n \geq 3)$  is a bounded domain with smooth boundary,  $\xi, \mu > 0$  are constants and  $\chi$  is a function satisfying some conditions. In the case that  $\chi$  is a constant it is known that the above system possesses a global classical solution under some conditions (Cao [4], Tao [10], Tao and Winkler [11]); however, in the case that  $\chi$  is a function, the above system has not been studied. The purpose of this paper is to establish global existence and boundedness in the above system.

<sup>2010</sup>Mathematics Subject Classification: Primary: 35Q92; Secondary: 35K51, 35A01.

Key words and phrases: chemotaxis-haptotaxis; signal-dependent sensitivity; global existence; boundedness

<sup>\*</sup>M. Mizukami is supported by JSPS Research Fellowships for Young Scientists, No. 17J00101.

<sup>&</sup>lt;sup>†</sup>T. Yokota is supported by Grant-in-Aid for Scientific Research (C), No. 16K05182.

<sup>&</sup>lt;sup>‡</sup>Corresponding author.

#### Download English Version:

# https://daneshyari.com/en/article/8899590

Download Persian Version:

https://daneshyari.com/article/8899590

<u>Daneshyari.com</u>