



US009408961B2

(12) **United States Patent**  
**Wegener et al.**

(10) **Patent No.:** **US 9,408,961 B2**  
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **MEMBRANE SEPARATION DEVICES, SYSTEMS AND METHODS EMPLOYING SAME AND DATA MANAGEMENT SYSTEMS AND METHODS**

(58) **Field of Classification Search**  
USPC ..... 210/206, 772, 784  
See application file for complete search history.

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 249 days.

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(21) Appl. No.: **14/003,281**

(22) PCT Filed: **Mar. 9, 2012**

(86) PCT No.: **PCT/US2012/028522**  
§ 371 (c)(1),  
(2), (4) Date: **Sep. 5, 2013**

(87) PCT Pub. No.: **WO2012/125470**  
PCT Pub. Date: **Sep. 20, 2012**

(65) **Prior Publication Data**  
US 2013/0341291 A1 Dec. 26, 2013

**Related U.S. Application Data**  
(60) Provisional application No. 61/451,903, filed on Mar. 11, 2011, provisional application No. 61/537,856, filed on Sep. 22, 2011, provisional application No. 61/538,558, filed on Sep. 23, 2011, provisional application No. 61/550,516, filed on Oct. 24, 2011.

(51) **Int. Cl.**  
**A61M 1/34** (2006.01)  
**A61M 1/02** (2006.01)

(52) **U.S. Cl.**  
CPC ..... **A61M 1/34** (2013.01); **A61M 1/0272** (2013.01); **A61M 1/0281** (2013.01); **A61M 1/265** (2014.02);

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(57) **ABSTRACT**  
A membrane separation device is disclosed along with systems and methods employing the device in blood processing procedures. In one embodiment, a spinning membrane separator is provided in which at least two zones or regions are created in the gap between the membrane and the shell, such that mixing of the fluid between the two regions is inhibited by a radial rib associated with the membrane that decreases the gap between the membrane and the shell to define two fluid regions, the ridge isolating the fluid in the two regions to minimize mixing between the two. Automated systems and methods are disclosed for separating a unit of previously collected whole blood into components, such as concentrated red cells and plasma, for collecting red cells and plasma directly from a donor in a single pass, and for cell washing. Data management systems and methods and priming methods are also disclosed.

**5 Claims, 30 Drawing Sheets**

