OMB No. 0925-0001 and 0925-0002 (Rev. 09/17 Approved Through 03/31/2020)

BIOGRAPHICAL SKETCH

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NAME: Sung Hyun (Joseph) Cho

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Assistant Research Professor

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

| INSTITUTION AND LOCATION | DEGREE(if applicable) | Completion DateMM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- |
| Korea University, Seoul, Korea | BS | 02/1997 | Agronomy |
| Korea University, Seoul, Korea | MS | 02/1999 | Molecular Biology |
| Korea University, Seoul, Korea | Ph. D | 02/2004 | Molecular Biology |
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**A. Personal Statement
I am a professional in molecular biology and biochemistry with more than 20 years of experiences. In particular, I have a full package of qualification for structural biology using cryo EM. I am proficient in cryo EM from preparation by vitrification to TEM analysis, and has been trained for KRIOS system. I also well qualified for single particle reconstruction using Relion, CryoSparc and cisTEM. In addition, I have fundamental knowledge and hands-on experiences on o Demonstrated and hands-on experiences in most molecular and cellular biology techniques including but not limited to Real-Time PCR, next generation sequencing, expression, purification and activity tests of recombinant proteins, FPLC, immunoblot assay, and confocal microscopy. I look forward to continuing the structural research using cryoEM at Pennsylvania State University.**

**B. Positions and Honors**

**2004 – 2007 Post Doctoral Scholar, Department of Biology, Washington University, St. Louis, MO**

**2007 – 2010 Post Doctoral Scholar, Department of Biology, Penn State University, University Park, PA**

**2010 – 2013 Research Associate, Department of Biology, Penn State University, University Park, PA**

**2013 – 2017 Research Associate, Department of Biology, Penn State University, University Park, PA**

**2017 – Present Assistant Research Professor Research Associate, Department of Biology, Penn State University, University Park, PA**

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| **1**. International Plant Molecular Biology Conference (Travel Award) | 2010 |
| **2.** Korea Science and Engineering Foundation (Postdoctoral Fellowship) | 2004-2005 |
| **3.** Korea Research Foundation (Brain Korea 21 Graduate student Fellowship)  | 2001-2004 |
| **4.** Korea Research Foundation (Brain Korea 21 Scholarship) | 1999-2001 |
| **5.** DAAD, German Government (Korea-Germany Graduate Students Exchange Program) | 2000 |
| **6.** National Graduate School Project Fund from Korea University (Scholarship) | 1997-1999 |
| **7.** Korea University (Award for an excellent grade) | 1995 |

**C. Contributions to Science**

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| --- |
| **1.** **Cho SH**, Purushotham P, Fang C, Maranas C, Díaz-Moreno SM, Bulone V, Zimmer J, Kumar M, Nixon BT (2017) Synthesis and assembly of cellulose microfibrils from reconstituted cellulose synthase. *Plant Physiology* 175(1) 146-156 |
| **2.** Purushotham P, **Cho SH**, Díaz-Moreno SM, Kumar M, Nixon BT, Bulone V, Zimmer J (2016) A single heterologously expressed plant cellulose synthase isoform is sufficient for cellulose microfibril formation *in vitro. Proc. Natl. Acad. Sci.* 113 (40) 11360-11365 |
| **3.** Du J, Vepachedu V, **Cho SH\***, Kumar M, Nixon BT (2016) Structure of the cellulose synthase complex of *Gluconacetobacter hansenii* at 23.4 Å resolution. *Plos One* DOI 10.1371, pone0155886  |
| **4.** Coruh C\*, **Cho SH\***, Shahid S, Liu Q, Wierzbicki A, Axtell MJ (2015) Comprehensive annotation of *Physcomitrella patens* small RNA loci reveals 23nt heterochromatic siRNAs dependent on a minimal Dicer-Like gene. *Plant Cell* 27(12):2148-2162 \*Co-first author |
| **5.** **Cho SH**, Du J, Sines I, Poosarla VG, Vepachedu V, Kafle K, Park YB, Kim SH, Roberts A, Kumar M, Nixon BT (2015) *In vitro* synthesis of cellulose microfibrils by membrane protein from protoplasts of the non-vascular plant *Physcomitrella patens. Biochemical Journal* 470, 195-205 |
| **6.** **Cho SH**, Coruh C, Axtell MJ (2012) miRNA156 and miR390 regulate tasiRNA accumulation and developmental timing in *Physcomitrella patens.* *Plant Cell* 24(12):4837-4849 |
| **7.** Arif MA, Fattash I, Ma Z, **Cho SH**, Beike A, Reski R, Axtell M, Frank W (2012) Compensatory DICER-LIKE3 activity in *Physcomitrella patens* DICER-LIKE4 mutants causes severe developmental dysfunction and sterility. *Molecular Plant* 5(6):1281-1294 |
| **8.** Khandelwal A, **Cho SH**, Marella H, Sakata Y, Perroud P-F, Pan A, Quatrano RS (2010) Role of ABA and ABI3 in desiccation tolerance. *Science* 327(5965):546  |
| **9.** Hoang QT\*, **Cho SH\***, McDaniel SF, Ok SH, Quatrano RS, Phan VC, Shin JS (2009) A novel plant cytolysin with an unusual phylogenetic distribution plays an important role in dehydration stress in *Physcomitrella patens. New Phytologist* 184(2):502-510 *\** Co-first author |
| **10. Cho SH**, Schwartzenberg KV, Quatrano RS (2009) The role of abscisic acid in stress tolerance. IN: The Moss *Physcomitrella*. (Eds. Knight CD, Cove DJ, and Perroud PF) Wiley Blackwell (Oxford). |
| **11.** Lee BK, Huh MK, Choi JS, **Cho SH** (2009) Phylogeny study of genus *Pelvetia* by internal transcribed spacer sequence (ITS). *J. Life Sci.* 19(3):311-316 |
| **12. Cho SH**, Addo-Quaye C, Coruh C, Arif MA, Ma Z, Frank W, Axtell MJ (2008) *Physcomitrella patens DCL3* is required for 22-24 nt siRNA accumulation, suppression of retrotransposon-derived transcripts, and normal development. *PLoS Genetics* 4(12):e1000314 |
| **13.** Rensing SA, Lang D, Zimmer AD, Terry A, Salamov A, Shapiro H, Nishiyama T, Perroud PF, Lindquist EA, Kamisugi Y, Tanahashi T, Sakakibara K, Fujita T, Oishi K, Shin-I T, Kuroki Y, Toyoda A, Suzuki Y, Hashimoto S, Yamaguchi K, Sugano S, Kohara Y, Fujiyama A, Anterola A, Aoki S, Ashton N, Barbazuk WB, Barker E, Bennetzen JL, Blankenship R, **Cho SH**, Dutcher SK, Estelle M, Fawcett JA, Gundlach H, Hanada K, Heyl A, Hicks KA, Hughes J, Lohr M, Mayer K, Melkozernov A, Murata T, Nelson DR, Pils B, Prigge M, Reiss B, Renner T, Rombauts S, Rushton PJ, Sanderfoot A, Schween G, Shiu SH, Stueber K, Theodoulou FL, Tu H, Van de Peer Y, Verrier PJ, Waters E, Wood A, Yang L, Cove D, Cuming AC, Hasebe M, Lucas S, Mishler BD, Reski R, Grigoriev IV, Quatrano RS, Boore JL. (2008) The *Physcomitrella* genome reveals evolutionary insights into the conquest of land by plants. *Science* 319(5859):64-69 |
| **14.** Cuming A, **Cho SH**, Kamisugi Y, Graham H, Quatrano RS (2007) Coordinated expression of stress responsive genes in the moss, *Physcomitrella patens. New Phytologist* 176(2):275-287 |
| **15. Cho SH**, Quatrano RS, Shin JS (2007) Transgenesis of *Physcomitrella patens*. *Transgenic Plant Journal* 1(1):99-103 |
| **16. Cho SH**\*, Hoang QT\*, Phee JW, Kim YY, Shin HY, Shin JS (2007) The modified suppression subtractive hybridization identified an AP2-containing protein which is involved in metal response in *Physcomitrella patens. Mol. Cells*. 23(1): 100-107*\** Co-first author |
| **17. Cho SH**\*, Hoang QT\*, Kim YY, Shin HY, OK SH, Bae JM, Shin JS (2006) Proteome analysis of gametophore identified a metallothionein involved in various abiotic stress responses in *Physcomitrella patens. Plant Cell Reports* 25(5):475-88*\** Co-first author |
| **18.** Oh KH, Cheon BY, **Cho SH**, Truong HQ, Ok SH, Jeung JU, Choi JW, Shin JS (2003) Expression of the bovine growth hormone alters the root morphology in transgenic tobacco plants. *Transgenic Research* 12: 363-367 |
| **19.** Chai ML, Senthil K, Mo SY, Chung YS, **Cho SH**, Shin JS, Park MH, Kim DH (2000) Embryogenic callus and *Agrobacterium*-mediated transformation in bentgrass (*Agrostis* spp.) *J. Kor. Soc. Hort. Sci.* 41(5): 450-454 |
| **20. Cho SH**, Chung YS, Cho SK, Rim YW, Shin JS (1999) Particle bombardment mediated transformation and GFP expression in the moss *Physcomitrella patens.* *Mol. Cells*. 9(1): 14-19 |

**D. Additional Information: Research Support and/or Scholastic Performance**

**CRYO-EM Class**

**Department of Infectious Disease, Penn State College of Medicine**

**July 2013 - September 2013 (3 months)**

**Korea-Germany graduate students exchange program**

**Department of Plant Biology, Freiburg University, Freiburg, Germany**

**Supported by DAAD (Germany), Advisor: Dr. Prof. Ralf Reski**

**July 2000 - August 2000 (2 months)**