

# Anaya Raj Pokhrel, PhD

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## **Current Address and Contact Information**

Institute of Biomolecules Reconstruction  
Department of Life Science and Biochemical Engineering  
Sun Moon University, Republic of Korea  
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## **Education**

- 2012-present **Doctor of Philosophy in Biochemistry**  
Department of Life Science and Biochemical Engineering, Sun Moon University, Republic of Korea (**Dissertation title:** Exploring the regulation of doxorubicin and daunorubicin biosynthesis from *Streptomyces peucetius* ATCC 27952)
- 2010-2012 **Master of Science in Biotechnology**  
Department of Biotechnology, Kathmandu University, Dhulikhel, Nepal  
Department of Pharmaceutical Engineering, Sun Moon University, Republic of Korea
- 2006-2010 **Bachelor of Technology in Biotechnology**  
Department of Biotechnology, Kathmandu University, Dhulikhel, Nepal

## **Career Goal**

- Getting exposure to high end research works for boosting skills and experience
- Seeking growth and career advancement with self-development and job satisfaction concerning personal as well as organizational goals

## **Research interest**

- Understanding the regulation of secondary metabolite biosynthetic pathways and manipulating the regulators for getting insights into their working mechanisms
- Combinatorial biosynthesis of secondary metabolites in heterologous host and engineering of biosynthetic pathways through the application of synthetic biology and metabolic engineering tools including engineering of polyketide biosynthesis through module shuffling and domain engineering
- Locating and overcoming the bottlenecks on biosynthesis of secondary metabolites and development of high yielding strains through pathway engineering
- Post biosynthetic modifications of natural products

**English Test Score** IELTS band 7 (valid until 2019)

## **Peer-Reviewed Journal Articles, Published or In Press**

1. Dipesh Dhakal, **Anaya Raj Pokhrel**, Biplav Shrestha, Jae Kyung Sohng (2017) Marine Rare Actinobacteria: Isolation, Characterization, and Strategies for Harnessing Bioactive Compounds. *Front Microbiol.* 8. DOI: 10.3389/fmicb.2017.01106.
2. Ramesh Prasad Pandey, Prakash Parajuli, **Anaya Raj Pokhrel**, Jae Kyung Sohng (2017) Biosynthesis of novel 7, 8-dihydroxyflavone glycoside derivatives and in silico study of their effects on BACE1 inhibition. *Biotechnol Appl Biochem.* DOI:10.1002/bab.1570.

3. Dipesh Dhakal, **Anaya Raj Pokhrel**, Amit Kumar Jha, Nguyen Huy Thuan, Jae Kyung Sohng (2017) *Saccharopolyspora* species: Laboratory maintenance and enhanced production of secondary metabolites. *Curr Protoc Microbiol*. Feb 6:10H-1.
4. Nguyen Huy Thuan, Sailesh Malla, Nguyen Thanh Trung, Dipesh Dhakal, **Anaya Raj Pokhrel**, Luan Luong Chu, Jae Kyung Sohng (2017) Microbial production of astilbin, a bioactive rhamnosylated flavanone, from taxifolin. *World J Microbiol Biotechnol*. DOI: 10.1007/s11274-017-2208-7.
5. Dipesh Dhakal, Amit Kumar Jha, **Anaya Raj Pokhrel**, Anil Shrestha, Jae Kyung Sohng (2016) Genetic manipulation of *Nocardia* species. *Curr Protoc Microbiol*. DOI: 10.1002/9780471729259.mc10f02s40.
6. **Anaya Raj Pokhrel**, Amit Kumar Chaudhary, Hue Thi Nguyen, Dipesh Dhakal, Tuoi Thi Le, Anil Shrestha, Kwangkyoung Liou, Jae Kyung Sohng (2016) Overexpression of a pathway specific negative regulator enhances production of daunorubicin in *bldA* deficient *Streptomyces peucetius* ATCC 27952. *Microbiol. Res*. DOI: 10.1016/j.micres.2016.06.009.
7. Dipesh Dhakal, Amit Kumar Chaudhary, Jeong Sang Yi, **Anaya Raj Pokhrel**, Biplav Shrestha, Prakash Parajuli, Anil Shrestha, Tokutaro Yamaguchi, Hye Jin Jung, Seung-Young Kim, Byung-Gee Kim, Jae Kyung Sohng (2016) Enhanced production of nargenicin A1 and creation of a novel derivative using a synthetic biology platform. *Appl Microbiol Biotechnol*. DOI: 10.1007/s00253-016-7705-3.
8. Amit Kumar Jha, Dipesh Dhakal, Pham Thi Thuy Van, **Anaya Raj Pokhrel**, Tokutaro Yamaguchi, Hye Jin Jung, Yeo Joon Yoon, Jae Kyung Sohng (2015) Structural modification of herboxidiene by substrate-flexible cytochrome P450 and glycosyltransferase. *Appl Microbiol Biotechnol*. DOI:10.1007/s00253-015-6431-6.
9. Dipesh Dhakal, Tuoi Thi Le, Ramesh Prasad Pandey, Amit Kumar Jha, Rit Bahadur Gurung, Prakash Parajuli, **Anaya Raj Pokhrel**, Jin Cheol Yoo, Jae Kyung Sohng (2015) Enhanced production of nargenicin A1 and generation of novel glycosylated derivatives. *Appl Biochem Biotechnol*. DOI:10.1007/s12010-014-1472-3.
10. Amit Kumar Chaudhary, **Anaya Raj Pokhrel**, Nguyen Thi Hue, Jin Cheol Yoo, Jae Kyung Sohng (2015) Paired-termini antisense RNA mediated inhibition of DoxR in *Streptomyces peucetius* ATCC 27952; *Biotechnol. Bioprocess Eng*. DOI: 10.1007/s12257-014-0810-1.
11. **Anaya Raj Pokhrel**, Dipesh Dhakal, Amit Kumar Jha, Jae Kyung Sohng (2015) Herboxidiene biosynthesis, production, and structural modifications: prospect for hybrids with related polyketide. *Appl Microbiol Biotechnol*. 99(20):8351-62. DOI: 10.1007/s00253-015-6860-2.
12. Amit Kumar Jha, **Anaya Raj Pokhrel**, Amit Kumar Chaudhary, Seong Whan Park, Wan Je Cho, Jae Kyung Sohng (2014) Metabolic Engineering of Rational Screened *Saccharopolyspora spinosa* for the Enhancement of Spinosyns A and D Production. *Mol Cells*. DOI:10.14348/molcells.2014.0168.
13. Prakash Parajuli, Ramesh Prasad Pandey, **Anaya Raj Pokhrel**, Gopal Prasad Ghimire, Jae Kyung Sohng (2014) Enzymatic glycosylation of the topical antibiotic mupirocin. *Glycoconj J*. DOI: 10.1007/s10719-014-9538-6.

#### **Peer-Reviewed Journal Articles, Under Review**

1. Biplav Shrestha, Dipesh Dhakal, Sumangala Darsandhari, Ramesh Prasad Pandey, **Anaya Raj Pokhrel**, Hum Nath Jnawali, Jae Kyung Sohng. Heterologous production of clavulanic acid intermediates in *Streptomyces venezuelae*. *Biotechnol. Bioprocess Eng*.
2. **Anaya Raj Pokhrel**, Hue Thi Nguyen, Sung Won Lee, Dipesh Dhakal, Amit Kumar Chaudhary, Jae Kyung Sohng. Modulating the expression of orphan histidine kinase OhkAsp in *Streptomyces peucetius* ATCC 27952 possess multiple effect on regulation of doxorubicin and daunorubicin biosynthesis. *Appl Microbiol Biotechnol*.

## Korean Journal Publications

1. Niraj Aryal, **Anaya Raj Pokhrel**, Prajjwal Rajbhandari, Janardan Lamichanne, Jae Kyung Sohng (2011) Extraction and analysis of bioactive secondary metabolite from marine *Streptomyces* sp. VN-1. *J. Biomolecule Reconstruction* 8(1), 16-22.
2. Amit Kumar Chaudhary, **Anaya Raj Pokhrel**, Je Won Park, Jae Kyung Sohng (2011) Monocistronic approach using synthetic biology for microbial system re-engineering. *J Biomolecule Reconstruction* 8(1), 23-31.
3. **Anaya Raj Pokhrel**, Niraj Aryal, Janardan Lamichanne, Jae Kyung Sohng (2011). Isolation and bioassay guided purification of antibacterial compound produced by marine *Streptomyces* sp. VN-1. *J Biomolecule Reconstruction* 8(2), 133-140.
4. Amit Kumar Chaudhary, **Anaya Raj Pokhrel**, Je Won Park, Jae Kyung Sohng (2011) tRNA encoding for a rare leucine codon, UUA may enhance doxorubicin production in *Streptomyces peucetius* ATCC 27952. *J Biomolecule Reconstruction* 8(2), 84-91.
5. Amit Kumar Chaudhary, Nguyen Thi Lan Huong, **Anaya Raj Pokhrel**, Je Won Park, Jae Kyung Sohng (2012) Codon optimized expression of difficult to express first glycosyltransferase enzyme of kanamycin and neomycin biosynthetic pathway in *Escherichia coli*. *J Biomolecule Reconstruction* 9(2), 108-115.
6. **Anaya Raj Pokhrel**, Amit Kumar Chaudhary, Saurav Bhattarai, Jae Kyung Sohng (2012) Homology modeling, active site identification and docking of kanamycin B in carbamoyltransferase from *Streptomyces rochei*. *Sun Moon Journal of Health Sciences*. ISSN 2093-1980. Volume 3, 89-96.
7. **Anaya Raj Pokhrel**, Amit Kumar Chaudhary, Jae Kyung Sohng (2012) New antibiotics as an emerging need and an enormous challenge. *J Biomolecule Reconstruction* 9(2), 93-102.
8. **Anaya Raj Pokhrel**, Amit Kumar Chaudhary, Dipesh Dhakal, Anil Shrestha, Yeo Joon Yoon, Jae Kyung Sohng (2013) Cloning of two initial genes of synthetic epothilone synthetic gene cluster for transcript analysis and protein expression. *J Biomolecule Reconstruction* 10(1), 65-73.
9. Amit Kumar Chaudhary, **Anaya Raj Pokhrel**, Dipesh Dhakal, Jae Kyung Sohng (2013) Bioinformatic analysis of T1pks-T3pks-nrps, a PKS and NRPS hybrid pathways from complete genome of *Streptomyces venezuelae* ATCC 10712. *J Biomolecule Reconstruction* 10(1), 1-8.
10. Dipesh Dhakal, Amit Kumar Chaudhary, **Anaya Raj Pokhrel**, Amit Kumar Jha, Sumangala Darsandhari, Biplav Shrestha, Jae Kyung Sohng (2013) Underpinning the secondary metabolites from *Nocardia* spp. *J Biomolecule Reconstruction* 10(1), 9-17.
11. **Anaya Raj Pokhrel**, Ramesh Prasad Pandey, Prakash Parajuli, Amit Kumar Chaudhary, Dipesh Dhakal, Sohng JK (2013) An attempt to enhance the solubility of violacein by generating glucoside analogs. *J Biomolecule Reconstruction* 10(2), 100-106.
12. Amit Kumar Chaudhary, Nhuyen Thi Hue, **Anaya Raj Pokhrel**, Jae Kyung Sohng (2013) Designing and construction of multi-monocistronic expression vector for *Streptomyces*. *J Biomolecule Reconstruction* 10(2), 93-99.
13. Biplav Shrestha, **Anaya Raj Pokhrel**, Birendra Yadav, Nguyen Thi Hue (2013) *In silico* analysis of putative cytochrome hydroxylase CYP C1120 from *Streptomyces* sp. PAMC26508 as vitamin D3 hydroxylase. *J Biomolecule Reconstruction* 10(2), 107-113.
14. Dipesh Dhakal, Le Thi Tuoi, **Anaya Raj Pokhrel**, Amit Kumar Jha, Ramesh Prasad Pandey, Jae Kyung Sohng (2014) Enzymatic synthesis of glycosylated derivatives of nargenicin A1. *J Biomolecule Reconstruction* 11(1), 9-15.
15. Nguyen Thi Hue, Le Thi Tuoi, Amit Kumar Chaudhary, **Anaya Raj Pokhrel**, Jae Kyung Sohng (2015) Supporting gene for 2-deoxy-scylo-inosose (2-DOI) in *E. coli*. *J Biomolecule Reconstruction* 11(2), 107-114.

16. Amit Kumar Jha, Pham Thi Thuy Van, Dipesh Dhakal, **Anaya Raj Pokhrel**, Biplav Shrestha, Jae Kyung Sohng (2015) Construction of clean host of *Streptomyces chromofuscus* ATCC 49982 for heterologous expression of gene cluster. *J Biomolecule Reconstruction* 11(2), 115-124.
17. Amit Kumar Jha, Pham Thi Thuy Van, Dipesh Dhakal, **Anaya Raj Pokhrel**, Biplav Shrestha, Jae Kyung Sohng (2015) Deletion of LacI family transcriptional regulator “*herA*” involved in herboxidiene production in *Streptomyces chromofuscus* ATCC 49982. *J. Biomolecule Reconstruction* 11(2), 125-133.
18. Biplav Shrestha, Ramesh Prasad Pandey, Sumangala Darsandhari, **Anaya Raj Pokhrel**, Jae Kyung Sohng (2015) Cloning of geranyltransferase *NphB* in *Streptomyces venezuelae* YJ028. *J. Biomolecule Reconstruction* 11(2), 100-106.

### **Conference Abstracts**

1. **Anaya Raj Pokhrel**, Amit Kumar Chaudhary, Hue Nguyen, Dipesh Dhakal, Le Thi Tuoi, Anil Shrestha Jae Kyung Sohng. Overexpression of a pathway specific self-repressing regulator enhances production of daunorubicin in *bldA* deficient *Streptomyces peucetius* ATCC 27952. 43rd KMB Annual Meeting & International Symposium, 2016.
2. **Anaya Raj Pokhrel**, Nguyen Thi Hue, Amit Kumar Chaudhary, Dipesh Dhakal, Le Thi Tuoi, Anil Shrestha, Jae Kyung Sohng. Genetic manipulation of *Streptomyces peucetius* ATCC 27952 for better understanding of the regulation of doxorubicin biosynthesis. Poster session presented at 13<sup>th</sup> International Symposium on the Genetics of Industrial Microorganisms. 16-20 October 2016. Wuhan, People’s Republic of China.
3. Hue Thi Nguyen, Tuoi Thi Le, **Anaya Raj Pokhrel**, Jae Kyung Sohng. Improved production of 2-Deoxystreptamine in *E. coli* using the biosynthetic genes from butirosin and neomycin pathway. Poster session presented at 13th International Symposium on the Genetics of Industrial Microorganisms. 16-20 October 2016. Wuhan, People’s Republic of China.
4. Nguyen Thi Hue, **Anaya Raj Pokhrel**, Nguyen Thanh Chung, Jae Kyung Sohng. Preparing the soluble protein from codon optimized KanF from kanamycin biosynthesis pathway for in vitro glycosylation of 2-DOS. Presented on 2017 Annual Winter Meeting of Korean Society for Glycoscience 16-18 January 2017 at Muju Resort.
5. Thuy Van Pham, Hue Thi Nguyen, **Anaya Raj Pokhrel**. Synthesis of doxorubicin analogues from *Streptomyces peucetius* mutant. Presented on 2017 Annual Winter Meeting of Korean Society for Glycoscience 16-18 January 2017 at Muju Resort.
6. Dipesh Dhakal, Amit Kumar Chaudhary, Amit Kumar Jha, **Anaya Raj Pokhrel**, Biplav Shrestha, Anil Shrestha, Jae Kyung Sohng. Enhancement of nargenicin A1 using synthetic biological platform. The Korean Society for Microbiology and Biotechnology 42nd Annual Meeting & International Symposium. June 24-26, 2015. Gyeonju, Korea.
7. **Anaya Raj Pokhrel**, Amit Kumar Chaudhary, Hue Thi Hguyen, Dipesh Dhakal, Anil Shrestha, Jae Kyung Sohng. The *bldA* tRNA helps to enhance production of doxorubicin and its intermediates in *Streptomyces peucetius* ATCC 27952. The Korean Society for Microbiology and Biotechnology 42nd Annual Meeting & International Symposium. June 24-26, 2015. Gyeonju, Korea.
8. Dipesh Dhakal, Amit Kumar Chaudhary, Jeong Sang Yi, **Anaya Raj Pokhrel**, Biplav Shrestha, Prakash Parajuli, Anil Shrestha, Tokutaro Yamaguchi, Hye Jin Jung, Jae Kyung Sohng. In-vivo glycosylation, hydroxylation and epoxidation of herboxidiene in *Streptomyces chromofuscus*. 2015 Annual Winter Meeting of Korean Society for Glycoscience, 2015, February 2-4, Muju, Korea.
9. Dipesh Dhakal, Amit Kumar Jha, **Anaya Raj Pokhrel**, Biplav Shrestha, Anil Shrestha, Hyeri Choi, Cho Kye Woon, Ramesh Prasad Pandey, Jae Kyung Sohng. One pot generation of novel glycosylated derivatives of nargenicin A1. Annual Winter Meeting of Korean Society for Glycoscience, 2015, February 2-4, Muju, Korea.

10. Dipesh Dhakal, Anil Shrestha, **Anaya Raj Pokhrel**, Jae Kyung Sohng. Production of nodusmicin by insertional gene inactivation in *Nocardia* sp. CS682. Presented at KMB 2015 42nd Annual Meeting & International Symposium. June 24-26, 2015 Gyeonju, Korea.
11. Biplav Shrestha, Dipesh Dhakal, Sumangala Darsandhari, Ramesh Prasad Pandey, **Anaya Raj Pokhrel**, Jae Kyung Sohng. Heterologous production of clavulanic acid intermediates in *Streptomyces venezuelae* YJ028. Poster session presented at KMB 2015 42nd Annual Meeting & International Symposium. June 24-26, 2015. Gyeonju, Korea.
12. **Anaya Raj Pokhrel**, Ramesh Prasad Pandey, Joo Young Shin, Jae Kyung Sohng. An attempt to enhance the solubility of violacein by generating glycoside analogs. 7<sup>th</sup> Japan-Korea Chemical Biology Symposium. 9–11 February 2014, Ramada Plaza Jeju, Republic of Korea.
13. Amit Kumar Chaudhary, **Anaya Raj Pokhrel**, Nguyen Thi Hue, Joo-Ho Lee, Hye Jin Jung, Jae Kyung Sohng. Engineering *Escherichia coli* BL21 (DE3) for biosynthesis of 1-deoxynojirimycin (DNJ) using single vector multi-modular system. The Korean Society for Biotechnology and Bioengineering Spring Meeting and International Symposium. 9-11 April 2014, Hyundai Hotel, Gyeongju, Republic of Korea.
14. Amit Kumar Jha, **Anaya Raj Pokhrel**, Amit Kumar Chaudhary, Gopal Prasad Ghimire, Jae Kyung Sohng. Metabolic engineering of rational screened *Saccharopolyspora spinosa* for enhancement of Spinosyns A and D production. The Korean Society for Biotechnology and Bioengineering Spring Meeting and International Symposium. 9-11 April 2014, Hyundai Hotel, Gyeongju, Republic of Korea.
15. Dipesh Dhakal, Amit Kumar Chaudhary, Amit Kumar Jha, **Anaya Raj Pokhrel**, Gopal Prasad Ghimire, Jae Kyung Sohng. Construction of multi-monocistronic vector for *Nocardia* species. The Korean Society for Biotechnology and Bioengineering Spring Meeting and International Symposium. 9-11 April 2014, Hyundai Hotel, Gyeongju, Republic of Korea.
16. Hue Thi Nguyen, Amit Kumar Chaudhary, **Anaya Raj Pokhrel**, Jae Kyung Sohng. Codon optimized expression of difficult to express first glycosyltransferase-*kanF* gene of kanamycin biosynthetic pathway in *E. coli*. The Korean Society for Biotechnology and Bioengineering Fall Meeting and International Symposium, 5-7 October 2014, Changwon Exhibition Convention center, Changwon, Republic of Korea.
17. Van Thi Thuy Pham, **Anaya Raj Pokhrel**, Amit Kumar Jha, Jae Kyung Sohng. Production of epelmycin-D and novel N,N-dimethylated-doxorubicin in *Streptomyces peucetius* ATCC 27952 by metabolic engineering. The Korean Society for Biotechnology and Bioengineering Fall Meeting and International Symposium, 5-7 October 2014, Changwon Exhibition Convention center, Changwon, Republic of Korea.
18. Biplav Shrestha, Amit Kumar Chaudhary, Amit Kumar Jha, Dipesh Dhakal, **Anaya Raj Pokhrel**, Jae Kyung Sohng. Exploring the role of CYP 450 (Orf20) in clavulanic acid production in *Streptomyces clavuligerus* NRRL 3585. The Korean Society for Biotechnology and Bioengineering Fall Meeting & International Symposium; 5-7 October 2014, Changwon Exhibition Convention center, Changwon, Republic of Korea.
19. Dipesh Dhakal, Le Thi Tuoi, Ramesh Prasad Pandey, Amit Kumar Jha, Rit Bahadur Gurung, Prakash Parajuli, **Anaya Raj Pokhrel**, Jae Kyung Sohng. Precursor directed enhancement of nargenicin A1 and generation of novel glycosylated derivatives. The Korean Society for Biotechnology and Bioengineering Fall Meeting & International Symposium; 5-7 October 2014, Changwon Exhibition Convention center, Changwon, Republic of Korea.
20. Amit Kumar Chaudhary, Bijay Singh, Sushila Maharjan, Amit Kumar Jha, **Anaya Raj Pokhrel**, Jae Kyung Sohng. Switching antibiotics production on and off in *Streptomyces* spp. by an lclR family transcriptional regulator from *Streptomyces peucetius* ATCC 27952. The Korean Society for Microbiology and Biotechnology 40th Anniversary 2013 International Symposium and Annual Meeting-Recent Breakthroughs. 3-5 July 2013, Alpensia, Pyeongchang, Republic of Korea.

### **NCBI Sequence Deposition**

1. Accession No. **KU878019** (*Streptomyces* sp. VN1 16S ribosomal RNA gene, partial sequence)
2. Accession No. **MF061601** (Orphan histidine kinase, *ohkAsp* gene from *Streptomyces peucetius* ATCC27952)

### **Laboratory Skills**

#### **Molecular Biology**

- Isolation and purification of DNA, RNA, plasmid, and genomic DNA from bacterial samples
- Cloning of a gene, PCR, overlap extension PCR, TA cloning, DNA sequence analysis, sub cloning
- Site-directed mutagenesis, saturation mutagenesis, silent mutation of a functional codon
- RT(reverse transcription)-PCR, cDNA preparation and quantification
- qRT-PCR data analysis
- Protein isolation, purification, SDS-PAGE, and protein quantification
- Vector design and development

#### **Bioinformatics**

- MEGA, CLUSTALX, SnapGene, Discovery Studio (protein modeling and docking) and online tools such as GenomeCompiler, MIBIG, antiSMASH for planning, designing and analysis purpose

#### **Genetics**

- Gene knock-out or knock down: gene disruption, replacement and silencing in bacteria
- Gene knock-in: site-specific recombination, homologous recombination into bacterial chromosome and screening of mutants

#### **Microbiology**

- Aseptic and sterile techniques for culture and subculture of *E. coli*, Actinomycetes including *Streptomyces* in solid and liquid medium
- Identification, staining, plating (by streaking, spread method, pouring) of bacteria and preparation of sample for morphological analysis by scanning electron microscope
- Antibiotic sensitivity check for determining MIC, reporter essay and for optimization of overlay concentration
- Transformation in *E. coli* by CaCl<sub>2</sub> and electroporation mediated method
- Transformation into actinomycetes by electroporation, PEG mediated protoplast method and intragenic conjugation with *E. coli*

#### **Chemical, Chromatography, and Spectroscopy**

- Extraction, fractionation, solubility test and analysis of compounds by thin layer chromatography (TLC), high pressure liquid chromatography (HPLC), preparative HPLC
- Analysis of LC mass data, basic analysis of <sup>1</sup>H and <sup>13</sup>C NMR data

#### **General**

- Planned and worked on multiple projects and prepared manuscripts
- Mentored the undergraduate students and troubleshoot the problems in research projects of graduate (masters) students
- Worked closely with multiple colleagues in both research and writing parts
- Laboratory function management including organization, ordering, and scheduling equipment use
- Developed research strategy to apply fund for PI and graduate student for the research

## **Grants Collaborated**

### **Project 1**

- Title: Biosynthetic study of herboxidiene derivatives as microbial herbicide
- Funded by: National Research Foundation of Korea (NRF) (Korean government)
- Collaborators: Prof. Jae Kyung Sohng, Amit Kumar Jha (PhD), **Anaya Raj Pokhrel**
- Time period: 3 years (2014-2017)

### **Project 2**

- Title: Study on synthesis of linear polyketide derivatives from herboxidiene PKS platform
- Funded by: National Research Foundation of Korea (NRF) (Korean government)
- Collaborators: Prof. Jae Kyung Sohng and **Anaya Raj Pokhrel**
- Time period: 3 years (2017-2020)

### **Project 3**

- Title: Manipulation of *Saccharopolyspora spinosa* ATCC 83543.1 for improving spinosyn biosynthesis by targeted mutation
- Funded by: Amicogen, Inc., Jinsung, Jinju, South Korea
- Collaborators: Prof. Jae Kyung Sohng, Prof. Seung Yong Kim, **Anaya Raj Pokhrel**
- Time period: 8 Months

## **Referees**

### **Prof. Jae Kyung Sohng, PhD (PhD Supervisor)**

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### **Prof. Janardan Lamichhane, PhD (Master's degree Supervisor)**

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