

# **BELL's Playlist for Cochlear Implant Users**

BELL's Playlist understands the unique challenges cochlear implant users face when listening to music. Therefore, we provide adjusted music based on scientific evidence, taking into account the stages of gradual improvement following surgery.

This playlist is designed to be a valuable resource not only for CI users but also for clinicians and therapists, offering them materials to assist their patients with guided music listening.

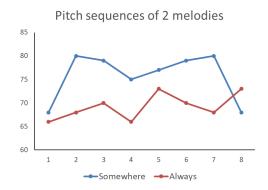


To experience BELL's Playlist, click <u>here</u> or scan the QR code on the right.

## Challenges and Solutions in Music Perception for CI Users

CI users often struggle with detecting subtle pitch variations, perceiving sounds with complex spectra, identifying timbre, and listening in environments with high reverberation or noise. However, they exhibit much better recognition of familiar songs.

 Pitch Interval: BELL's playlist is arranged sequentially from songs containing wide pitch intervals to those predominantly using narrower pitch intervals.





 Timbre: We offer recordings where only the original melody is extracted, enabling users to experience it played by six different instruments.



- Spectral Complexity: To reduce spectral complexity, we separated the melody and accompaniment, presenting them individually to each ear even when listened to together.
- **Reverberation**: To enable music appreciation even in real-world settings, we also created a version with added reverberation.
- **Familiarity**: We used familiar real songs from various genres to enhance the enjoyment of music appreciation and ease of recognition.

# **BELL's Playlist Guide**

- You can listen via a Bluetooth app or loudspeakers, and if possible, please listen in stereo.
- BELL's Playlist is organized by difficulty level on a weekly basis, so we recommend starting from Week 1 and progressing in order.
- While it is advisable to repeatedly listen to the playlist of each week, you are
  also free to select your favorite songs to create your own personalized
  playlist according to your taste.
- By exploring the same music in various timbres, versions, and contexts, we offer a method to more clearly understand the nuances of the original song.



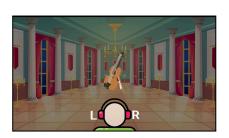
#### **Contents**

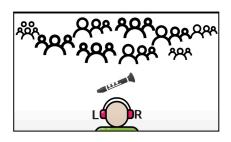
- Week 1 6: Exploring Monophonic Melodies on Different Instruments
  - $\circ$  Order: Original song  $\to$  Monophonic melody played by six different instruments  $\to$

Original song

- Week 1: Somewhere Over the Rainbow
- Week 2: Beauty and the beast
- Week 3: Hey Jude
- Week 4: You Raise Me Up
- Week 5: Butter
- Week 6: Always With Me
- Week 7 12: Listening to Melody and Accompaniment Separately
  - $\circ$  Order: Original song  $\to$  Melody  $\to$  Melody + Accomp. (stereo)  $\to$  Original song
    - Week 7: Somewhere Over the Rainbow
    - Week 8: Beauty and the beast
    - Week 9: Hey Jude
    - Week 10: You Raise Me Up
    - Week 11: Butter
    - Week 12: Always With Me
- Week 13 18: Listening to Music in Reverberant Conditions
  - Order: Original song → Reverb-added songs → Original song
    - Week 13: Somewhere Over the Rainbow
    - Week 14: Beauty and the beast
    - Week 15: Hey Jude
    - Week 16: You Raise Me Up
    - Week 17: Butter
    - Week 18: Always With Me
- Week 19 24: Listening to Music in Noisy Environments
  - $\circ$  Order: Original song  $\rightarrow$  Noise-added songs  $\rightarrow$  Original song
    - Week 19: Somewhere Over the Rainbow
    - Week 20: Beauty and the beast
    - Week 21: Hey Jude
    - Week 22: You Raise Me Up
    - Week 23: Butter
    - Week 24: Always With Me









## **CI User Testimonials**

"By listening and switching back and forth between various instruments, the melody seemed to become clearer to me." (50s, unilateral, less than 1 year of CI experience)

"After listening to the melody with various instruments, I found that, when I listened to the original song, the lyrics became clearer and the rhythm more discernible." (60s, bilateral, 3 and 16 years of CI experience)

"I knew I had to listen to music, but I didn't know what kind to listen to or how to go about it. This has been a good opportunity." (50s, bilateral, 1 year and 16 years of CI experience)

## Feel Free to Enjoy BELL's playlist!

We suggest that the playlist could be a valuable resource for clinicians and therapists by providing a structured approach to rehabilitation.

Additionally, it could improve music enjoyment and overall well-being for CI users.

For any questions, contact us at <a href="mailto:mensa04@snu.ac.kr">mensa04@snu.ac.kr</a>
BELL Therapeutics <a href="https://www.belltherapeutics.com">https://www.belltherapeutics.com</a>

## **Credits**

- Director: Jeong Mi Park
- Research: Jeong Mi Park, Jiyeon Ha, Wonwoo Lee, Jonghwa Jeonglok Park
- Music Producing: Kim seo yeon, Wonwoo Lee, Jonghwa Jeonglok Park
- Artwork & Video: Holy Moly! Studio
- Music Copyright: 'Over the Rainbow' by Harold Arlen & E.Y. Harburg, EMI Feist
  Catalog Inc., 'Tale as Old as Time' by Peabo Bryson & Celine Dion, Walt Disney
  Music Company, 'Hey Jude' by John Lennon & Paul MacCartney, Sony/ATV Music
  Publishing, 'You Raise Me Up' by Brendan Graham & Rolf Lovland, Peermusic III Ltd



- and Universal Music Publishing, 'Butter' by Alexander Bilowitz, Jenna Andrews, Robert Grimaldi, Ron Perry, Sebastian Garcia, BTS 2 Bam, & Stephen Kirk, 27musicpub % Sony/ATV Tunes LLC, Feelwritemusic, Twentyseven, 'Always with Me' by Joe Hisaishi & Masae Kimura, Walt Disney Music Company
- Supported by BELL Therapeutics Inc.

#### References

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