Table C-13. Visual function and visual acuity outcomes in RPS studies

Study	Outcomes	Comparator	Post-implantation VA	Change
Arevalo et al. 2015[13,14] Argus II	Grating visual acuity	Pre-implantation: 1 L projection, 7 LP	Post-implantation: 4 HM, 2 L projection, 2 LP	A majority of patients improved. Study did not report how many improved.
Arevalo et al. 2015[13,14] Argus II	Square localization	Stimulator OFF: NR	Stimulator ON: NR	80% of patients performed better with the stimulator ON than OFF
Arevalo et al. 2015[13,14] Argus II	Direction of motion	Stimulator OFF: NR	Stimulator ON: NR	40% of patients improved with the stimulator ON vs. OFF, 40% did slightly better, and 20% stayed the same
Ho et al. 2015 and other authors[15-26] Argus II	Square localization: percentage of subjects whose system ON results were significantly better than system OFF	Stimulator OFF	Stimulator ON Year 1 (n=16 patients): 93.8% did significantly better than with the stimulator OFF Year 3 (n=28): 89.3% did significantly better than with the stimulator OFF Year 5 (n=21) 80.9% of patients did significantly better with the stimulator ON than with the stimulator OFF	Proportion of subjects with significantly better system ON than OFF results was not significantly different between 1 and 3 years for this test. Performance has remained better with the system ON than OFF on all visual tests, with these results sustained out beyond 5 years of chronic use.
Ho et al. 2015 and other authors[15-26] Argus II	Direction of motion: percentage of subjects whose system ON results were significantly better than system OFF	Stimulator OFF	Stimulator ON Year 1 (n=16 patients): 62.5% did significantly better than with the stimulator OFF Year 3 (n=27): 55.6% did significantly better than with the stimulator OFF Year 5 (n=20) 50.0% of patients did significantly better with the stimulator ON than with the stimulator OFF	Proportion of subjects with significantly better system ON than OFF results was not significantly different between 1 and 3 years for this test. Performance has remained better with the System ON than OFF on all visual tests, with these results sustained out beyond 5 years of chronic use.

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Ho et al. 2015 and other authors[15-26] Argus II	Grating visual acuity: percentage of subjects who scored between 2.9 and 1.6 logMAR with the system ON. None of the subjects scored with the system OFF	Stimulator OFF/Fellow eye: No subject could score on the scale at baseline.	Stimulator ON Year 1 (n=29 patients): 48.2% did significantly better than with the stimulator OFF Year 3 (n=27): 33.3% did significantly better than with the stimulator OFF Year 5 (n=21) 38.1% of patients did significantly better with the stimulator ON than with the stimulator OFF	Proportion of subjects with significantly better system ON than OFF results was not significantly different between 1 and 3 years for this test. Performance has remained better with the System ON than OFF on all visual tests, with these results sustained out beyond 5 years of chronic use.
Ho et al. 2015 and other authors[15-26] Argus II	Letter recognition in force choice test. Letters were divided into 3 groups (Group A only horizontal and vertical components, Group B oblique components, Group C oblique or curved element involving half the letter height. (n=21)	Stimulator OFF Mean % correct Group A: 17.7±12.9% Group B: 11.8±10.7% Group C: 15.3±7.4% Mean time in seconds for correctly identified letters Group A: NR Group B: NR Group C: NR	Stimulator ON Mean % correct Group A: 72.3±24.6% Group B: 55.0±27.4% Group C: 51.7±28.9% Mean time in seconds for correctly identified letters Group A: 47.7 s Group B: 68.6 s Group C: 63.9 s	Stimulator ON vs. OFF for all groups of letters p<0.001
Ho et al. 2015 and other authors[15-26] Argus II	Letter size reduction test: Given to subjects who correctly identified at least 50% of letters in each group of letters in the letter identification task within 60 seconds took part in this test. Test used ETDRS letter set and layout with a True Type Century Gothic font but, unlike ETDRS letters, were presented 1 at a time in white on a black background (n=6)	Stimulator OFF No eye patching Mean total letters identified correctly 2 (SE:0.5)	Stimulator ON Scrambled, both eyes patched Mean total letters identified correctly 1.0 (SE:0.25) Scrambled, no eyes patched Mean total letters identified correctly 3.0 (SE: :2) No eyes patched Mean total letters identified correctly 46.0 (SE:30) Both eyes patched Mean total letters identified correctly 45.0 (SE:30)	Scrambled mode was no better than Stimulator OFF condition, suggesting letter identification is not primarily dependent on head scanning, light detection, and inference but uses spatial information in the percept. Significant differences were found for the OFF condition vs. ON no patching and for ON scrambled with no patching vs. ON no patching (p<0.05).

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Ho et al. 2015 and other authors[15-26] Argus II	Word recognition test presented to subjects who completed letter recognition and letter size reduction test successfully. 10 words per trial were presented (n=4)	Stimulator OFF Patients correctly identified between 0 and 2 two-letter words, between 0 and 1 three-letter words, and between 0 and 1 four-letter words	Stimulator ON Scrambled and unpatched Patients correctly identified between 0 and 1 two-letter words, 0 and 2 three-letter words, and 0 and 1 four-letter words Scrambled and patched Patients correctly identified between 0 and 1 two-letter words, 0 three letter words, and 0 and 1 four-letter words Standard mode and unpatched Patients correctly identified between 5 and 10 two-letter words, 5 to 8 three letter words, and 3 and 10 four-letter words Standard mode and patched Patients correctly identified between 7 and 10 two-letter words, 5 to 9 three letter words, and 4 and 9 four-letter words	Patients benefited from the stimulator in STANDARD mode over SCRAMBLED or OFF mode.
Seider and Hahn 2015[27] Argus II	Square localization	System OFF: (3/40) 7.5%	System ON: (13/40) 32.5%	Patient benefited from the System being ON
Seider and Hahn 2015[27] Argus II	Direction of Motion	System OFF: (5/80) 6.3%	System ON: (10/80) 12.5%	Patient benefited from the System being ON
Seider and Hahn 2015[27] Argus II	Grated visual acuity	System OFF: NR	System ON: NR	Patient did not benefit from the System being ON

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Stingl et al. 2015, 2013[28,29] Alpha IMS	BaLM test: Light threshold perception, light source localization, and motion detection of dot patterns were tested on a 60 cm distant screen as 2- or 4-AFC tests in 8 or 12 trials each. 1st test speed was 3.3 degrees per second and was increased if participants passed (75% responses light source localization, AFC) or 62.5% responses (localization and motion, 4 AFC) correct were required to pass the test.	Stimulator OFF LP percentage of patients passing test Month 1 (n=27) 10% Month 3 (n=22) 3% Month 6 (n=17) 10% Month 9 (n=11) 0% Month 12 (n=10) 0% Light localization, percentage of patients passing test Month 1 (n=26) 0% Month 3 (n=19) 0% Month 6 (n=15) 0% Month 9 (n=11) 0% Month 12 (n=7) 0% Movement, percentage or patients passing test Month 1 (n=22) 0% Month 3 (n=17) 0% Month 6 (n=15) 9% Month 9 (n=9) 0% Month 12 (n=6) 0%	Best achieved results: 86% (25/29 patients) passed the light test, 59% (17/29 but test only administered to 28 patients) passed the location task, and 21% (6/29 but test only administered to 25 patients) passed the motion task. LP percentage of patients passing test Month 1 (n=27) 78% Month 3 (n=22) 82% Month 6 (n=17) 70% Month 9 (n=11) 38% Month 12 (n=10) 41% At every time point all comparisons were statistically significant Light localization, percentage of patients passing test Month 1 (n=26) 38% Month 3 (n=19) 31% Month 6 (n=15) 25% Month 9 (n=11) 17% Month 12 (n=7) 12% Only months 1 through 3 were statistically significant Movement, percentage of patients passing test Month 1 (n=22) 14% Month 3 (n=17) 12% Month 6 (n=15) 8% Month 9 (n=9) 0% Month 12 (n=6) 0% No comparison at any time point was statistically significant	At all visits implant ON was significantly better than implant OFF for LP. For light localization, implant ON was significantly better than implant OFF for visits months 1, 2, and 6. For motion. The highest speed for which motion was correctly recognized was 3 to 35 degrees for implant ON. When the implant was OFF, 1 patient passed the motion test in 3.3 degrees per second in a 4 AFC test once.

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Stingl et al. 2015, 2013[28,29] Alpha IMS	Grating acuity and VA with standardized Landolt C-rings in contrast reversal (white ring/black background) were tested on 60 cm distant screen as 2- or 4-AFC in 8–12 trials. Patients had to report the orientation of the grating and the direction of the C-ring gap. At least 75% (2 AFC) or 62.5% (4 AFC) were required to pass the tests.	Stimulator OFF Grating acuity, percentage of patients passing test Month 1 (n=22) 15% Month 3 (n=17) 8% Month 6 (n=15) 0% Month 9 (n=10) 0% Month 12 (n=6) 0% Landolt C-rings, percentage of patients passing test Month 1(13) 0% Month 3 (n=9) 0% Month 6 (n=4) 0% Month 9 (n=4) 0% Month 12 (n=1) 0%	Best achieved results: Grating acuity: 48% passed test (14/29 but only administered to 25 patients) Best achieved results: Landolt C-ring VA: 14% passed (4/29 but only administered to 15 patients) Grating acuity, percentage of patients passing test Month 1 (n=22) 50% Month 3 (n=17) 46% Month 6 (n=15) 20% Month 9 (n=10) 30% Month 12 (n=6) 18% Only comparisons at months 1–3 were statistically significant Landolt C-rings, percentage of patients passing test Month 1 (n=13) 17% Month 3 (n=9) 22% Month 6 (n=4) 0% Month 9 (n=4) 0% Month 12 (n=1) 0% No time points showed statistically significant comparisons	Significantly better for implant ON versus OFF for visits months 1–3. Grating acuity resolutions with the implant ON ranged from 0.1 to 3.3 cycles per degree. 5 patients passed the grating acuity test with the implant OFF but all 5 patients had higher percentage of correct responses with the implant ON. 4 patients completed standardized VA testing with contrast reversal Landolt C-rings with VA of v20/2000, 20/2000, 20/606, and v320/546 with the implant ON.

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Stingl et al. 2015, 2013[28,29] Alpha IMS	Recognition and activities of daily living were performed on a black table using white objects with luminance around 200 to 600 cd/m^2 and the black table cloth below 30 cd/m^2. Letters: Read white letters on a black background, so a 26 AFC test with a response rate above 52% considered a passing grade. Letter size subtended a visual angle of up to 10 degrees. Timeout of each letter reading was 2 minutes.	Stimulator OFF Percent of patients passing test Month1 (n=16) 0% Month 3 (n=10) 0% Month 6 (n=8) 0% Month 9 (n=7) 14% Month 12 NR	Best achieved results: 14% passed (5/29 but only administered to 19 patients) Percent of patients passing test Month1 (n=16) 25% Month 3 (n=10) 11% Month 6 (n=8) 13% Month 9 (n=7) 15% Month 12 NR No comparisons were statistically significant	No statistically significant advantage to having the stimulator ON versus OFF. 4 patients passed the test at least once and could read letters. 1 patient passed the test with both the stimulator ON and OFF at visit month 9 but was unable to read any letters at study enrollment.
Ayton et al. 2014[30] Bionic Vision	Phosphene percepts (light): stimulation of the electrode array commenced for weekly psychophysics sessions of between 2 and 5 hours. The first stimulation session was held 55 days, 87 days and 37 days postoperatively, respectively, for the 3 patients. Stimulation was delivered using a custom-built neurostimulator that allowed direct stimulation of the individual electrodes via connection with the percutaneous connector and is designed to allow flexible configuration of testing parameters. The stimulator delivered charge-balanced biphasic current pulses with pulse widths ranging from 100 to 1,000 ms per phase. The electrodes were capacitively coupled and shorted between current pulses to remove any potentially damaging residual charge. Unless otherwise stated, the electrodes were stimulated in a monopolar electrode configuration using one of the 2 mm diameter platinum electrodes as the return.	NR	Reliable phosphene percepts: 3/3 patients Patients varied in the number of pulses per second required to experience percepts	NA

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Ayton et al. 2014[30] Bionic Vision	Visual acuity was assessed with the Landolt C optotype recognition subtest from FrACT, presented in a darkened room (108–114 lux) using a 30-inch computer monitor placed at 57 cm viewing distance. Testing incorporated a head-mounted video camera with a manufacturer stated field-of-view of 67°650.25° (Arrington Research, Inc., Scottsdale, AZ) and a pixel dimension of 320 by 240 pixels. Within the implant, the 20 stimulating electrodes are arranged in a staggered grid measuring 3.5 mm 63.46 mm, corresponding to a visual field projection on the retina of 12.4°612.2°. Floor effect (unable to estimate VA lower than 3.24 logMAR).	Device OFF no optotypes were seen (n=1)	Device ON: 2.62 mean logMAR, Rng 2.35–3.02 across 19 sessions (n=1)	Wilcoxon Rank-Sum Test z= -2.280, p=0.010 in favor of the device ON condition, n=1 patient (who was enrolled in the trial the longest)
Ayton et al. 2014[30] Bionic Vision	Light localization subtask of the BaLM test presented to subjects in a darkened room (108–114 lux) using a 30-inch computer monitor placed at 57 cm viewing distance. The BaLM test was completed with all subjects. Testing incorporated a head-mounted video camera with a manufacturer-stated field of view of 67°650.25° and a pixel dimension of 320 by 240 pixels. Within the implant, the 20 stimulating electrodes are arranged in a staggered grid measuring 3.5 by 63.46 mm, corresponding to a visual field projection on the retina of 12.4°612.2°. The BaLM test involves detection of a light wedge in 1 of 4 quadrants, and assesses the ability of the device to improve light localization skills. Given that the response options were 4 alternative forced choices (4 AFC), the chance rate was 25% and the criterion cutoff for success set at 62.5%. The device ON setting used a vision processing algorithm called Lanczos2 filter to ensure artefacts from such down-sampling do not appear, such as a flickering which may result from making small head movements with the camera viewing fine detail. This makes objects appear more consistent in their appearance.	Device OFF percentage correct was 27.8%, 25%, and 25%, respectively	Device ON: percentage correct was 97.5%, 71.4%, and 66.7%, respectively	Difference was p<0.0001 in all 3 patients
Rizzo et al. 2014[31] Argus II	Square localization was tested with both eyes open and device ON (mean distance from target center)	Pre-implantation: Mean 7.34 cm	Post-implantation 3 months: mean 4.42 cm 6 months: 4.68 cm 12 months: 4.6 cm	4/5 patients improved

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Rizzo et al. 2014[31]	Direction of motion was tested with both eyes open and device ON (number of correct responses)	Pre-implantation: Mean 21.8	Post-implantation 3 months: mean 18.2 6 months: 19 12 months: 29.4	3/5 patients improved
Rizzo et al. 2014[31]	Grating acuity was tested only in implanted eye with the device ON	Pre-implantation: 0 patients could identify gratings	Post-implantation: 1 patient was able to identify gratings, grating VA 2.2 logMAR in the operative eye with stimulator ON	1 patient improved
Fujikado et al. 2011[32] STS	The system was tested 2 times per week from 1 week after implantation for 4 weeks. Threshold currents were increased until patients could recognize and localize phosphenes 50% of the time. Patients indicated the location of a perceived phosphene by pointing to spots on a plastic board. Patients were blinded to stimulation because the sequence of presentation was randomized. Efforts were made to identify false positives (stimulator off but buzzer on). Object detection with head scanning: A white box was set randomly to the left or right of the center of the board and patients were asked to locate it.	Stimulator off performance was less than chance level 2/2 patients	Better than chance (50%): 2/2 patients	2/2 patients scored better than chance
Fujikado et al. 2011[32]	The system was tested 2 times per week from 1 week after implantation for 4 weeks. Threshold currents were increased until patients could recognize and localize phosphenes 50% of the time. Patients indicated the location of a perceived phosphene by pointing to spots on a plastic board. Patients were blinded to stimulation because the sequence of presentation was randomized. Efforts were made to identify false positives (stimulator off but buzzer on). Experiment 2: Object discrimination with head scanning 2 white bars of different widths were presented at the center of the board and patients were asked to tell the examiner whether the thicker bar was on the left or right.	Stimulator OFF performance was less than chance level 2/2 patients	Better than chance (50%): 2/2 patients	2/2 patients scored better than chance

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Fujikado et al. 2011[32]	The system was tested 2 times per week from 1 week after implantation for 4 weeks. Threshold currents were increased until patients could recognize and localize phosphenes 50% of the time. Patients indicated the location of a perceived phosphene by pointing to spots on a plastic board. Patients were blinded to stimulation as the sequence of presentation was randomized. Efforts were made to identify false positives (stimulator off but buzzer on). Experiment 3: Detection of direction of motion Patients were asked to keep their heads stationary. The rectangular white box was placed in front of the patients and was moved horizontally or vertically. The patients were asked to tell whether the bar moved horizontally or vertically.	Stimulator off performance was less than chance level 2/2 patients	Better than chance: 1 patient	1 patient scored 90% which was better than chance while the second patient scored 60% which was not better than chance
Fujikado et al. 2011[32]	The system was tested 2 times per week from 1 week after implantation for 4 weeks. Threshold currents were increased until patients could recognize and localize phosphenes 50% of the time. Patients indicated the location of a perceived phosphene by pointing to spots on a plastic board. Patients were blinded to stimulation as the sequence of presentation was randomized. Efforts were made to identify false positives (stimulator off but buzzer on). Ability to perceive 2 distinct phosphenes when stimuli were delivered through 2 channels	BLP	1/2 patients	NA
Fujikado et al. 2011[32]	The system was tested 2 times per week from 1 week after implantation for 4 weeks. Threshold currents were increased until patients could recognize and localize phosphenes 50% of the time. Patients indicated the location of a perceived phosphene by pointing to spots on a plastic board. Patients were blinded to stimulation as the sequence of presentation was randomized. Efforts were made to identify false positives (stimulator off but buzzer on). Ability to perceive phosphenes	BLP	2/2 patients	NA

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Klauke et al. 2011 and other authors[33-37] EPIRET3	Visual percepts as a result of electrical stimulation of different pulse amplitudes and durations on days 7, 14, and 27 after implantation. Catch trials with stimulation commands sent but no current applied were used to identify false positives. Subjects were blinded to which stimuli were used/which stimuli parameters were varied and electrode stimulation order was randomly presented.	LP: 4 patients No LP: 1 patient HM: 1 patient	NR	Visual percepts seen: 6 patients Visual percepts in all stimulation sessions: 4 patients Positive response to first stimulation pulses: 4/6 patients False positives: 6% Ability to differentiate between different spatiotemporal patterns: 5 patients Although not consistently reported, the authors presented examples of patients recognizing patterns and differentiating between stimulation sites
Zrenner et al. 2011[38] Alpha IMS	Light detection and localization using BaLM, 2 to 4 AFC, including light detection, basic temporal resolution (2 flashes of light), object localization, and movement detection.	Stimulator OFF Flash test: 50%, 37%, and 62.5% (3/3 failed) Localization test: 1/3 failed with 38% correct and 2/3 not tested. Movement test (4 AFC): 2/3 failed, with 17% and 50% correct and 1 not tested. Grid direction detection: Large grids 3/3 failed; 1 patient was tested at the next difficulty level and failed with 12.5% correct responses	Stimulator ON Flash test (2 AFC) percentage correct: 81.3%, 100%, 100% Localization test: 1/2 patients passed with 87.5% correct, 1 failed with 25% correct responses, and 1 patient was not tested. Movement test: passed by 1 patient (63% correct), 1 patient failed with 25%, 1 patient not tested Grid direction detection (4 AFC) For large grids 2/3 passed with 11/14 and 100% correct responses and 1/3 almost passed with 60% correct responses. 1 patient was tested at the next level of difficulty and passed with 62.5% correct responses	Flash test ON vs. OFF, n=16, p=0.00005

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Zrenner et al. 2011[38] Alpha IMS	Optional test: Single letter recognition	Stimulator OFF The patient who passed with the stimulator ON was tested with stimulator OFF and failed with 29% correct	Stimulator ON 1 patient passed with 100% correct responses, 2 patients not tested	1 patient benefited with device in ON mode
Zrenner et al. 2011[38] Alpha IMS	Standardized FrACT test with Landolt C optotypes and an up and down staircase procedure. If Landolt C was passed, single letters were used subsequently.	Stimulator OFF Only presented to patient who passed with the stimulator ON: patient failed	1/3 could see the Landolt C rings and discern letters with VA logMAR 1.69, 2 patients failed (but one of these patients reported seeing the Landolt ring gap clearly)	1/3 passed test
Zrenner et al. 2011[38] Alpha IMS	Visual percept	Stimulator OFF	DS Array Perception of a single electrical pulse at a single electrode: 3/3 patients showed stronger pupil constrictions in the stimulator ON position and reported simultaneous light perception. Single pulse, row of 4 electrodes: 3/3 recognized the correct orientation and 2/3 saw dark spots between the dots Single-pulse oblique line: 2/3 passed Pattern U in 4 directions (4 AFC): 2/3 passed Multiple letters: 1/3 passed, 1/3 partly seen, and 1/3 failed Sequential stimulation clockwise vs. counterclockwise	NA
Zrenner et al. 2011[38] Alpha IMS	Recognition of single letters cut out of paper and presented on a table 5–8 cm (16 AFC)	Stimulator OFF The patient who passed was tested with the stimulator OFF and failed with 0% correct responses (5 AFC)	Stimulator ON 1 patient tested and passed with 61% correct responses, 2 patients not tested	1 patient benefited

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Chow et al. 2010 and Geruschat et al.[3,39] Extension study ASR	CGAT: The CGAT test was developed because ETDRS testing even at ½-m distance is limited in the low vision range by the largest letter size of 20/1600 (logMAR 1.9). CGAT extends this range and tested from 20/125 (logMAR 0.8) to 20/6400 (logMAR 2.5). All vision testing was conducted with full cycloplegia applied at least 40 minutes before testing and full refractive correction for the test distance. The test is a 4 AFC test. Subjects had to identify the orientation of the grating (vertical, horizontal, diagonal left, diagonal right).	NA	This testing starting at 2.5 years postoperatively and by the final followup 6/6 patients had mean CGAT scores that were higher in the implanted than in the nonimplanted eye. Patient 5 Implanted 20/165 Nonimplanted 20/225 Patient 6 Implanted 20/585 Nonimplanted 20/4050 Patient 7 Implanted 20/200 Nonimplanted 20/300 Patient 8 Implanted 20/2420 Nonimplanted 20/2600 Patient 9 Implanted 20/328 Nonimplanted 20/3140 Patient 10 Implanted 20/796 Nonimplanted 20/2503	6/6 improved in implanted over nonimplanted eye.

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Chow et al. 2010 and Geruschat et al.[3,39] Extension study ASR	ETDRS acuity testing was performed at ½ m with 6 different charts, using 3 charts per eye and averaged. Cycloplegic agents with appropriate correction for refractive error at ½ m were used and subjects read letters in a forced choice manner.	Implanted eyes performed similarly to control eyes in the pre-operative period (6 patients). Patient 5 Implanted eye: 21.0 (16–25) letters Nonimplanted 25.7 (24–28) letters Patient 6 Implanted 0 (0–0) letters Nonimplanted 1.8 (0–3) letters Patient 7 Implanted 0 (0–0) letters Nonimplanted 0 (0–0) letters Patient 8 Implanted 0 (0–0) letters Nonimplanted 23 (17–27) letters Patient 9 Implanted 0 (0–0) letters Nonimplanted 0 (0–0) letters Patient 10 Implanted 0 (0–0) letters Nonimplanted 0.2 (0–1) letters	After implantation, through 8 years of followup, 4/6 patient's implanted eyes outperformed unimplanted eyes and 2/6 did not. 8 year or final followup Patient 5 Implanted 22.7 (17–29) Nonimplanted 9.3 (6–12) Patient 6 Implanted 5.0 (3–9) letters Nonimplanted 1.7 (1–2) letters Patient 7 Implanted 1 (0–2) letters Nonimplanted 0.3 (0–1) letters Patient 8 Implanted 0.7 (0–1) letters Nonimplanted 1.3 (0–3) letters Patient 9 Implanted 0–1.5 letters Nonimplanted 0–1.5 letters Patient 10 Implanted 0.7 (0–1) letters Nonimplanted 0 (0–0) letters	4/6 patients improved from pre- to post-operative period.

Table C-13. Visual function and visual acuity outcomes in RPS studies (continued)

Study	Outcomes	Comparator	Post-implantation VA	Change
Chow et al. 2004[40,41] ASR	Letter recognition	ETDRS: VA measured using standard back-illuminated ETDRS charts at 0.5 m with cycloplegia and BCVA with a retinoscopic refraction at 0.5 m. If neither of the top 2 lines of letters could be identified, visual acuity of HM, CF, and LP was recorded in 9 visual field sectors. Patients 1–4: 0 letters Patient 5: 16–25 letters OD, 24–28 letters OS Patient 6: 0 letters OD, 0 to 3 letters OS	ETDRS Patients 1 through 4: 0 letters (3 patients), able to see some of the largest letters OD only (20/1280 to 20/1600) at 12–18 month followup (1 patient) Patient 5 at 6-month followup: 35–41 letters OD, 21–28 letters OS Patient 6 at 6-month followup: 25–29 letters OD, 0 letters OS	3/6 patients experienced some improvement

AFC=alternative forced choice; ASR=Artificial Silicon Retina; BaLM=Basic Assessment of Light and Movement; BCVA=best corrected visual acuity; BLP=bare light perception; cd=candela; CF=count fingers; CGAT= Chow grating acuity test; DS=direct stimulation; ETDRS=Early Treatment Diabetic Retinopathy Study; FrACT=Freiburg visual acuity test; HM=hand motion; L projection=light projection; LP=light perception; logMAR=logarithm of the minimal angle of resolution; NA=not applicable; NR=not reported; OD=*oculus dexter*, right eye; OS=*oculus sinister*, left eye; Rng=range; SE=standard error; STS=Suprachoroidal Transretinal Stimulation; VA=visual acuity