

The Hong Kong Manifesto for Assessing Researchers: Fostering Research Integrity

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31 **The current academic reward system and research integrity**

32 Research integrity and responsible conduct of research concern the behaviours of researchers that
33 influence the validity of research findings or the trust in science. The factors driving detrimental
34 research practices (1) are multifactorial and likely fall into one of three clusters: researchers,
35 their local research culture and the system of science. The Hong Kong Manifesto (HKM) is
36 focused on one of the most important factors in the system of science that influence the way
37 researchers behave, namely, how they are assessed. It is a global problem, globally which we
38 believe requires action.

39

40 Yet some researchers have seen their careers advanced partly due to adopting detrimental
41 research practices. Several scholars have noted the moral and ethical perils of this situation (2,3).
42 Promotion and tenure occur because researchers have been able to satisfy the current criteria
43 needed to advance their careers. Current university promotion and tenure schemes may well have
44 been useful when initially developed decades ago. Most of these criteria are narrow, potentially
45 flawed, not evidence-based, and mainly concern counts of publications and citations. They are
46 out of step today and may be partly responsible for the current problems the research enterprise
47 is struggling with. There is a growing awareness that current reward criteria are of limited value,
48 do not foster research integrity, and might even function as a set of perverse incentives (4,5). We
49 propose 5 principles, including a rationale for each one along with how each principle can be
50 implemented, to improve the assessment of researchers. They are a call to action aimed at
51 academic institutions, national policymakers (e.g., the UK's Research Excellence Framework;
52 the Canadian Academy of Health Sciences framework for impact assessment), and funders,
53 primarily. The principles are based on previous efforts (6) and greatly benefitted from feedback
54 from participants of the 6th World Conference on Research Integrity. While we consider the
55 principles important, their usefulness will depend on how they are implemented (7).

56

57 **Promoting the importance of trustworthy research responding to societal needs**

58 There is tremendous value in scholarship and how it is used to acquire new knowledge,
59 particularly for societal benefit. Such contributions to society can take many forms. Most directly
60 when researchers conduct experiments the results of which identify effective interventions to
61 combat diseases or improve social well-being. Less tangible but responding to society's curiosity

62 about its very existence include contributions such as the recent first picture of a black hole.
63 Arguably societal benefit will more likely occur when a participatory approach, preferably
64 including public engagement, is integrated into the research process. Practically, this is easier
65 and most valuable when there is a direct participatory approach with researchers, such as helping
66 decide on outcomes of relevance in clinical research (8). A participatory approach may be less
67 comfortable when engaging in setting research priorities, such as astrophysical exploration.
68 Transparent, truthful, open science, including open access publications, following
69 recommendations, such as the FAIR Guiding Principles for scientific data management and
70 stewardship (9) and public communication are ways to optimize value to society and enhance
71 research integrity. This move towards open science is starting to happen, globally (10-13), and
72 will likely gain momentum when these activities are imbedded into trainee programs (14) and
73 taken into account when assessing researchers.

74

75 More appropriate reward criteria may help improve the impact of research, and researchers,
76 including its societal value and enhance research integrity within academic organizations and
77 beyond. For example, Kings College's Strategic Vision 2029 takes societal needs into
78 consideration when assessing researchers for promotion (15). How researchers are evaluated
79 reflects what we value most in the research enterprise and powerfully influences researchers'
80 behavior, including research integrity. Societal benefit is difficult to measure but universities,
81 other research institutions, and funders should not shy away from reflecting on what it means to
82 them (16). There is evidence that researchers tailor their publication practices to evaluation
83 criteria applied in their institution (17). This evidence implies that modifying current incentives
84 and rewards is an important next step to optimize societal value and strengthen research
85 integrity. The HKM five principles aim to guide the desired improvements.

86

87 ***Principle 1: Assess researchers based on responsible practices in all aspects of the research***
88 **enterprise**

89 Rationale

90 The quantity of publications and total volume of grants are still dominant metrics used by
91 universities and other research institutions for rewarding their researchers (6). Along with
92 'simple' citation counts these metrics should be downgraded in any revised promotion and tenure

93 scheme. This is also the same for the Journal Impact Factor (JIF) and the Hirsch-index. The
94 quantitative criteria are key incentives to current career advancement as is providing fiscal
95 rewards to academics for publishing in certain journals (i.e., merit pay) which is common in
96 many parts of the world (18-20). These are not responsible metrics and tell assessors little about
97 their researchers and the quality of their work. These metrics can be gamed and provide little
98 information about a publication's contributions to science and society. Other criteria may be
99 better markers of best practices. Registration of research is associated with increased publication
100 quality (21); sharing data is associated with increased citations (22); patients support sharing of
101 their data (23). Incentivizing and rewarding these, and similar behaviors, will ensure promotion
102 and tenure is a step towards robust research integrity.

103

104 Implementation

105 Transparency is not only essential for the ability to detect biases when they occur (24) but may
106 also prevent them from occurring and restrict other questionable research practices (25), such as
107 p-hacking or HARKing (Hypothesizing After Results are Known) and can effectively be
108 prevented by registration (26), including registered reports, of study protocols and data-analysis
109 plans (27). All research involving hypothesis testing should be registered regardless of the
110 discipline (at least 2000 registries exist - 28). Promotion and Tenure Committees (PTCs) should
111 mandate this as a minimum expectation and modify their assessment criteria to include
112 responsible practices, particularly for where there is a strong evidence base. Universities should
113 also promote experimentation with CVs such that researchers can more easily document
114 responsible research practices that are aligned with research integrity. This is beginning to
115 happen (29). Modified CVs will also facilitate (PTCs) being able to document this information
116 for career advancement decisions.

117

118 Funders can help by allowing grant applicants to include responsible research practice expenses
119 as allowable costs in their budget requests. Funders can also implement policies such that
120 responsible research practices, such as data sharing, is mandatory in all grant applications.
121 Academic institutions and funders should explicitly endorse efforts to reduce the importance of
122 JIFs and other similar metrics when assessing researchers (e.g., 30,31) or allocate funds for
123 research on research that help build the evidence base of responsible incentives and rewards.

124 PTCs should be explicit about giving less weight to citation metrics when considering career
125 advancement. To assess the effects of implementing this principle universities can audit a
126 (random) sample of CVs for data sharing statements, prior study registration and other
127 responsible indicators; this is beginning to happen (32).

128

129 ***Principle 2: Value the reporting of all research, regardless of the results and reward honest***
130 ***and transparent reporting***

131 Rationale

132 In an update of their previous systematic review of journal publication following initial
133 presentation as conference abstracts, Scherer and colleagues report on data collected from 425
134 studies (33). Publication bias (i.e., not publishing study findings based on whether their statistical
135 results are positive or negative) is on the rise: 37% of conference abstracts were published as
136 completed papers in 2018 compared to 44% in 2007. Furthermore, the frequency of other
137 reporting biases (e.g., switched primary outcomes without attribution, and spin) at about 30% is
138 unacceptably high (34). Such behaviors diminish the trustworthiness and research integrity of
139 research (20). Even though reporting guidelines improve the transparency of reporting (35,36)
140 they are not being used sufficiently. For example, editors do not consistently recommend their
141 use to peer reviewers (37). PTCs generally seem to ignore the importance of registering
142 protocols and data analysis plans, publishing completed studies and their associated data, code,
143 and materials (38).

144

145 *Implementation*

146 Researchers need to be rewarded for all completed research that is reported regardless of whether
147 the results are statistically significant; examples of this are starting to appear in university
148 appraisal committees (39). PTCs can reward researchers for making these studies publicly
149 available as preprints (40) or in repositories (e.g., university repositories). When submitting CVs
150 to their PTCs, researchers can ensure that each report or publication includes optimal best
151 practices information (e.g., reporting guideline used, where they exist (e.g., 41)). Some journals
152 in the social sciences, particularly psychology, use registered reports to help ensure that research
153 is published regardless of whether it is statistically significant (42,43). Some disciplines will
154 have different mechanisms to ensure transparency and truthfulness (44), which are pillars of

155 research integrity; these should also be incorporated into promotion and tenure guidance. Some
156 funders, such as the Wellcome Trust, have policies in place to foster transparency in research
157 (e.g., 45). Funders could sanction grantees who do not report the results of completed research
158 by not allowing them to apply for new grants without making publicly available previous
159 research funded by them. To assess the effects of this principle, PTCs can use (or adapt)
160 automated tools to provide data about reporting completed studies (46) and quality of reporting
161 (47). While these tools are limited to specific areas of research (i.e., clinical trials) they could be
162 adapted for other research domains.

163

164 ***Principle 3: Value the practice of open science***

165 Rationale

166 Openness brings equality to the research process. Access to research should not be about who
167 has the resources to pay for it. A participatory approach with professionals should be able to
168 make healthcare or social policy decisions based on access to all research knowledge rather than
169 only a part of it (48). A considerable amount of public funds is used for research; its results can
170 have profound societal consequences. Openness is critical in these circumstances. Basic
171 scientists are committing to openly share their laboratory notebooks (49) in an effort to foster
172 collaborations and reduce unnecessary duplication. In an effort to deter questionable authorship
173 (e.g., ghost or gift authorship) CASRAI developed the CRediT taxonomy (50) as a way for
174 research authors to more openly document a broad range of activities they participated in during
175 a research project. Data sharing is another example of openness. It barely exists in clinical
176 research (with some exceptions, such as genetics) (51) although patients seem supportive of
177 sharing their data, at least in randomized trials they have participated in (23). Data sharing is also
178 not part of the research norm in many other disciplines. Without data sharing it will be difficult
179 to check the selectivity of reports and reduce the reproducibility crisis (52,53). There are varying
180 estimates as to which proportion of research that is made available through open access
181 mediums, such as open access journals; it is far from 100% (54). Open peer review is another
182 emerging example of openness in the research ecosystem. It is too early to say what the best
183 arrangements are for open research across disciplines. What is clear is that researchers should be
184 incentivized and rewarded for research openness; this is in keeping with robust research
185 integrity.

186

187 Implementation

188 Universities and other research institutions can support a culture of open science, such as in
189 publication and data sharing. Being open is not without costs and some funders, such as in The
190 Netherlands are enabling this to happen (55). Research institutions will need to prepare the
191 landscape to ease the implementation of rewarding responsible practices. For example, to
192 facilitate data sharing, it is likely that the FAIR (Findability, Accessibility, Interoperability and
193 Reusability) principles will need to be in place (9). Similarly, implementation of data sharing as
194 a career advancement item will be enhanced if universities and other research institutions,
195 perhaps through their library system, include educational outreach about FAIR and other data
196 sharing issues. There are expenses associated to enabling data sharing and universities may need
197 to make funds available to help researchers prepare for data sharing. PTCs could ask researchers
198 to add openness information, such as data sharing associated with specific research publications,
199 in their CVs. Some openness best practices can be easily captured; ORCID and F1000 are two
200 examples, the latter providing DOIs for reviews of manuscript which can also be included in a
201 CV. It is important that the assessment of researchers also contains criteria and indicators that
202 reflect the way the candidate contributes to the culture of open research. It seems possible to base
203 this judgement on the approach used by the Transparency and Openness Promotion (TOP)
204 guidelines (56). These guidelines were designed to reflect the level to which scientific journals
205 have adopted or wish to adopt the culture of open research. With some minor adjustments TOP
206 guidelines can probably be used for the analysis of the CV and the list of publications of
207 individual researchers. Finally, any assessments of a researcher's openness need to acknowledge
208 and account for the complexities of intellectual property. To assess the effects of openness
209 universities can calculate the fraction of reports and publications available through open access
210 against the total number of reports/publications from that institution, annually.

211

212 ***Principle 4: Value a broad range of research activities, such as innovation, replication,***
213 ***synthesis, and meta-research***

214 Rationale

215 When deciding on research priorities and societal value of research, it is not always immediately
216 clear whether an idea or hypothesis will lead to the desired outcome. So-called blue-sky research

217 building on accidental findings or curiosity-driven research based on out-of-the-box thinking
218 should be possible and encouraged as well in an academic reward system that values societal
219 progress (57). For example, the discovery of graphene at the University of Manchester, UK, was
220 the result of Friday afternoon discussions outside the normal research activities (58). Examples
221 from a broad range of disciplines exist (59). Commercial entities, such as Google and Deepmind,
222 are investing in this kind of research by employing researchers with the understanding that not
223 all efforts will immediately lead to important outcomes. The short-term nature of academic
224 research assessment exercises and reward cycles make this kind of research less attractive for
225 funders, institutions and individual researchers. Equally, replication studies or research synthesis
226 efforts are often not regarded as innovative enough in research activity assessments despite their
227 importance for the trustworthiness of research or for a balanced and robust systematic
228 presentation of all available evidence, respectively (53,60); this is not universally appreciated by
229 PTCs. Meta-research as practiced, for example, at METRICS (Stanford, USA) (61), QUEST
230 (Berlin, Germany) (62) whose focus is on clinical and preclinical meta-research and Tilburg
231 University (63) (Tilburg, The Netherlands) whose focus is on the social sciences, is important to
232 inform and improve research practices and therefore contribute to make research more reliable
233 and relevant.

234

235 Implementation

236 Meta-research is gaining momentum and now has some outlets. For example, PLOS Biology has
237 a meta-research section in the journal. The Wellcome Trust recently held a call for replication
238 research (64); The Netherlands Organization for Scientific Research is in its third call for
239 replication studies (65). A reward system for the benefit of society and one that encourages
240 trustworthy and important research needs to take the different types of research into account.
241 Different indicators and criteria need to be developed that are relevant to these different types of
242 research. This includes different timeframes of assessment for different types of research. For
243 example, the importance and relevance of blue-sky research could be assessed based on its
244 potential, such as the development the New Horizons project to flyby the object MU69 in the
245 Kuiper Belt (66). This initiative took more than one career cycle to develop and implement.

246

247 ***Principle 5: Value a range of other contributions to research, such as peer review for grants***
248 ***and publications, and mentoring***

249 Rationale

250 Research assessments frequently focus on publications, citations and funding income (6, 67). For
251 the research ecosystem to function optimally other research activities are also essential. For
252 instance, peer review remains the cornerstone of quality assessment of grants and articles. Peer
253 review contributions to journals and funders, should also be part of assessments for promotion
254 and tenure as should contributions to research infrastructure, oversight, or regulations. Equally,
255 contributions to an overall improvement that goes beyond an individual-centered approach for
256 assessment, should be taken into account. These activities are currently largely missing from
257 PTCs (67). Similarly, mentoring research trainees and researchers at all stages of their research
258 career is a critical aspect of helping to ensure the next generation of researchers are trained
259 adequately about the importance of the trustworthiness of research. Membership on various
260 committees directly related to research (e.g., assuming the role of an editor) is another important
261 activity fulfilled by researchers but not always incentivized and rewarded. How best to do this
262 without creating further barriers and tick-box exercises, however, has long been debated (68).
263 Any reward system that has the whole research enterprise at heart and aims to foster a climate
264 conducive to trustworthy and useful research with the highest regard to integrity, needs to find
265 ways to incorporate these vital roles into its overall assessment structure.

266

267 Implementation

268 Give credit and develop best practices for peer review activities and timely, constructive
269 comments on research by other authors (69). Funders, research institutions and journals can
270 develop policies to meaningfully recognize researchers for contributing to a broad range of
271 activities that enhance the activities of these organizations and by default research and society
272 (70). It is important to create an open culture of education, mentoring, and learning about
273 research planning, conduct, and reporting with particular attention to research integrity.
274 Activities that benefit the institutional research culture beyond an individual's research efforts
275 need to be part of any reward system. To assess the effects of this principle, PTCs could for
276 instance assess how many PhDs researchers mentor remaining in academia achieved full

277 professorship. Endorsed peer reviews completed by researchers (e.g., Publons) is another way to
278 assess this principle.

279

280 **Comment**

281 There is an emerging view that this is a crucial time in the movement of research assessment
282 reform. This movement is crossing disciplinary and national borders. There is a window of
283 opportunity now to make changes that were previously thought impossible. There are also risks
284 to modifying the current system of promotion and tenure. For researchers at universities
285 implementing the HKM who seek opportunities where the HKM is not implemented, they may
286 be perceived as less competitive, and vice-versa. Like almost all change there will be costs
287 associated with implementing these 5 principles. Such costs are likely to be more easily absorbed
288 by resource rich institutions. Some institutions may favor a stepwise approach to introducing and
289 implementing the principles enabling the entire university ecosystem to become familiar with
290 modifications to the current system. For example, implementing principle 2 may be an easier
291 starting point compared with implementing principle 5. The benefits of implementing these
292 principles most likely outweigh the risks when using the evidence proposed by the HKM in the
293 assessment of career advancement and enhancing research integrity across universities.

294 Whatever changes are made need to include researchers in their formulation and implementation
295 and need to be done with the same care and scrupulous standards we apply to research itself.

296

297 The HKM focuses on the issues of research assessment that strengthen research integrity.
298 Similarly, the HKM concentrates primarily on what universities and other research institutions
299 can do to modify the criteria used by PTCs for career assessments. The HKM is grounded on the
300 idea that implementation of the 5 principles plays a critical role in any change to how researchers
301 are assessed for career advancement. Finally, the HKM integrates evaluation as a key feature in
302 assessing the usefulness of the 5 principles. The HKM initiative is not the first; others exist, such
303 as the Declaration on Research Assessment (DORA) (30) and the Leiden Manifesto (31). DORA
304 is an explicit drive away from JIFs towards a more inclusive qualitative examination of research,
305 namely its contents, when assessing researchers. The Leiden Manifesto is similarly positioned
306 focusing on “best practice in metrics-based research assessment so that researchers can hold
307 evaluators to account, and evaluators can hold their indicators to account.” (31). We hope the

308 HKM will complement these and other efforts and highlight the importance of research integrity
309 in any reconfiguration of incentives and rewards for career advancement. Having more than one
310 group call for change will perhaps reinforce the message of the various initiatives and speak to
311 complementary audiences.

312

313 *Dissemination*

314 Beyond journal publication we are developing adjuvant dissemination outputs. The World
315 Conferences on Research Integrity Foundation (71) and the REWARD Alliance (72) will make
316 available the HKM on their websites. This includes the manifesto, the signatories, some
317 infographics about the manifesto for dissemination purposes, a place to endorse it, translations
318 into several languages (ongoing) and future implementation plans (ongoing).

319

320 *Endorsement and implementation*

321 Universities and other research institutions are prime agents to endorse and implement the HKM.
322 They are the home of current and future researchers where promotion and tenure assessments are
323 carried out. University PTCs could adapt the TOP approach (56; implemented in over 5000
324 journals) to these 5 principles making this information publicly available on university websites.
325 For example, for principle 2, one extreme (level 0) would be that an institution acknowledges
326 doing nothing; no incentives or rewards for making all research results publicly available or
327 signing a declaration of transparency, namely, that the results are an accurate and honest account
328 of what the researchers did and found (44). At the other extreme (level 3) the university would
329 explicitly state that they require their researchers to share the results of all of research regardless
330 of the statistical direction of the results. Universities can decide the time interval as to when to
331 complete audits to monitor the commitment to full reporting of all research results. Researchers
332 failing to meet this level of commitment will not be allowed to pursue promotion and tenure or
333 apply for new funding for a period of time. Levels 1 and 2 would be a commitment somewhere
334 between level 0 and level 3. The advantage of universities adopting such an approach is that that
335 it provides a meaningful comparison of research integrity across universities, globally. To fully
336 implement such an adaption across the 5 principles and levels will require funding and input
337 from others.

338

339

340 We are inviting individuals and/or organizations to deliver brief (2-3 minutes) YouTube
341 testimonials as to how they have implemented the HKM (categorized by stakeholder group).
342 This approach can serve as a pragmatic way for individuals and organizations to disseminate
343 how they are endorsing and implementing the HKM and as a nudge to others about
344 implementation. We would like to develop tool kits for any organization interested in ways to
345 implement good research integrity practices related to the 5 principles. Developing and
346 populating the tool kits will require funding and time. We envision the tool kits including:
347 examples of successful implementation approaches; standard operating procedures to implement
348 modifications to PTC criteria; examples of CV modifications to include items proposed in our
349 five principles; successful ways universities and other research organizations have engaged their
350 researchers to help implement change; and designs and evaluations of the effectiveness of any
351 implement strategies of the 5 principles. Such efforts constitute a ‘bottoms up’ approach to
352 implementation. Whether implemented at the local or national level, changes in researcher
353 assessment criteria should be fully documented and made openly available. Institutions making
354 changes to their promotion and tenure criteria should implement an evaluation component as part
355 of the process. Evaluations that provide the most internally valid results and greatest
356 generalizability should be used.

357

358 To help facilitate implementation of the HKM key opinion leaders should be included in any
359 plan. We invite individuals and organizations to endorse and implement the HKM. We would
360 like to provide audit and feedback on dissemination, endorsement and implementation data of the
361 principles. This will also require funding. The ultimate assessment of the HKM is whether there
362 is an improvement in the scientific enterprise. We will report any progress at the forthcoming
363 QUEST/REWARD/EQUATOR conference in Berlin in February 2020 and at the 7th WCRI in
364 2021. Finally, we anticipate this formulation of the HKM will be endorsed by the Governing
365 Board of the World Conferences on Research Integrity Foundation and the Steering Committee
366 of the Reduce research Waste And Review Diligence. We invite universities, funders, other
367 groups and individuals to do likewise on the WCRI’s website. We envision later updates and
368 welcome suggestions of other best practices, particularly if there is a strong conceptual rationale
369 and an evidence base for them. We think the HKM is unique because the principles are driven by

370 evidence, whenever possible, and reflects a commitment to research integrity when advancing
371 the careers of faculty.

372

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375

376

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