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### ESPS PEER-REVIEW REPORT

**Name of journal:** World Journal of Biological Chemistry

**ESPS manuscript NO:** 31153

**Title:** Retroviral integrase protein and intasome nucleoprotein complex structures

**Reviewer's code:** 00484099

**Reviewer's country:** Chile

**Science editor:** Fang-Fang Ji

**Date sent for review:** 2016-11-04 08:55

**Date reviewed:** 2016-11-06 23:16

CLASSIFICATION	LANGUAGE EVALUATION	SCIENTIFIC MISCONDUCT	CONCLUSION
<input checked="" type="checkbox"/> Grade A: Excellent	<input checked="" type="checkbox"/> Grade A: Priority publishing	Google Search:	<input checked="" type="checkbox"/> Accept
<input type="checkbox"/> Grade B: Very good	<input type="checkbox"/> Grade B: Minor language polishing	<input type="checkbox"/> The same title	<input type="checkbox"/> High priority for publication
<input type="checkbox"/> Grade C: Good		<input type="checkbox"/> Duplicate publication	
<input type="checkbox"/> Grade D: Fair	<input type="checkbox"/> Grade C: A great deal of language polishing	<input type="checkbox"/> Plagiarism	<input type="checkbox"/> Rejection
<input type="checkbox"/> Grade E: Poor	<input type="checkbox"/> Grade D: Rejected	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Minor revision
		BPG Search:	<input type="checkbox"/> Major revision
		<input type="checkbox"/> The same title	
		<input type="checkbox"/> Duplicate publication	
		<input type="checkbox"/> Plagiarism	
		<input checked="" type="checkbox"/> No	

#### COMMENTS TO AUTHORS

very good review, thanks for putting this structural analysis in a nice way so anyone can understand.

## ESPS PEER-REVIEW REPORT

**Name of journal:** World Journal of Biological Chemistry

**ESPS manuscript NO:** 31153

**Title:** Retroviral integrase protein and intasome nucleoprotein complex structures

**Reviewer's code:** 00416708

**Reviewer's country:** Japan

**Science editor:** Fang-Fang Ji

**Date sent for review:** 2016-11-04 08:55

**Date reviewed:** 2016-11-29 19:13

CLASSIFICATION	LANGUAGE EVALUATION	SCIENTIFIC MISCONDUCT	CONCLUSION
<input checked="" type="checkbox"/> Grade A: Excellent	<input checked="" type="checkbox"/> Grade A: Priority publishing	Google Search:	<input checked="" type="checkbox"/> Accept
<input type="checkbox"/> Grade B: Very good	<input type="checkbox"/> Grade B: Minor language polishing	<input type="checkbox"/> The same title	<input type="checkbox"/> High priority for publication
<input type="checkbox"/> Grade C: Good		<input type="checkbox"/> Duplicate publication	
<input type="checkbox"/> Grade D: Fair	<input type="checkbox"/> Grade C: A great deal of language polishing	<input type="checkbox"/> Plagiarism	<input type="checkbox"/> Rejection
<input type="checkbox"/> Grade E: Poor	<input type="checkbox"/> Grade D: Rejected	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Minor revision
		BPG Search:	<input type="checkbox"/> Major revision
		<input type="checkbox"/> The same title	
		<input type="checkbox"/> Duplicate publication	
		<input type="checkbox"/> Plagiarism	
		<input checked="" type="checkbox"/> No	

### COMMENTS TO AUTHORS

The review for retroviral integration with structural aspect by Grawenhoff & Engelman is well-organized and written, therefore, is highly recommended to publication. For the readers of the journal, the reviewer recommend to edit the introduction. The reviewer well-understand that the authors describe RT step in the introduction. For researchers who do not focus on retroviral integration(including HIV), it is too simple for RT description (P4 line 5). On the other hand, in this review article, description for RT step is not required. Moreover, it is difficult to distinguish RT and preintegration complexes. Therefore, the reviewer would like to rewrite these phrases.

## ESPS PEER-REVIEW REPORT

**Name of journal:** World Journal of Biological Chemistry

**ESPS manuscript NO:** 31153

**Title:** Retroviral integrase protein and intasome nucleoprotein complex structures

**Reviewer's code:** 00504881

**Reviewer's country:** United States

**Science editor:** Fang-Fang Ji

**Date sent for review:** 2016-11-04 08:55

**Date reviewed:** 2016-11-28 21:23

CLASSIFICATION	LANGUAGE EVALUATION	SCIENTIFIC MISCONDUCT	CONCLUSION
<input type="checkbox"/> Grade A: Excellent	<input type="checkbox"/> Grade A: Priority publishing	Google Search:	<input type="checkbox"/> Accept
<input type="checkbox"/> Grade B: Very good	<input type="checkbox"/> Grade B: Minor language polishing	<input type="checkbox"/> The same title	<input type="checkbox"/> High priority for publication
<input type="checkbox"/> Grade C: Good	<input type="checkbox"/> Grade C: A great deal of language polishing	<input type="checkbox"/> Duplicate publication	<input type="checkbox"/> Rejection
<input type="checkbox"/> Grade D: Fair	<input type="checkbox"/> Grade D: Rejected	<input type="checkbox"/> Plagiarism	<input type="checkbox"/> Minor revision
<input type="checkbox"/> Grade E: Poor		[Y] No	<input type="checkbox"/> Major revision
		BPG Search:	
		<input type="checkbox"/> The same title	
		<input type="checkbox"/> Duplicate publication	
		<input type="checkbox"/> Plagiarism	
		[Y] No	

### COMMENTS TO AUTHORS

This review on retroviral intasome structure by Grawenhoff and Engelman is in continuation of excellent reviews articles from Engelman's group in recent years and it particularly provides discussion recently resolved structures of MMTV SSC and RSV STC structures. The citation of several original research articles (not just the recent ones and only the review articles) in this review article is highly appreciated. I have included few suggestions to improve the technical language and couple missing relevant information. Even though several articles (and this one too) have used the term : integration is "catalyzed" by integrase (in Abstract, first paragraph of introduction, title of second heading on page 4, Fig 1 legend and other places too). The correct terminology is integration of viral DNA in host DNA is "mediated" by integrase (also including the 3-processing step). Technically, catalysis means enhancing the reaction rate. However, in this case integrase is essential for above two reactions. Similar language change is warranted for reverse-transcriptase (RT). Reverse transcription is mediated (not catalyzed) by RT (first paragraph in Introduction). Page-12, couple sentences on the top of the page. Authors mentioned that HIV-1 IN require vDNA of several hundred bp to perform concerted integration while the PFV is able to carry out concerted integration with short



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DNAs (15-30 bp). This statement would have been correct couple of years back; however recent publications have reported efficient concerted integration by HIV-1 IN using similar sized short DNAs (18-40 bp). It was first reported by Pandey/Grandgenett group et al. in *Biochemistry*, 2011 (PMID 21992419) with wild type full-length HIV IN and later by Li/Craigie group et al., *PLoSOne* 2014 (PMID 25119883) using a modified HIV-1 IN (Sso7d fusion). The small section on IN-LEDGF co-crystal structure (page 10) seem to be out of place in this review which mainly focuses on Intasome structures (IN-DNA nucleoprotein complexes). It might be advisable to take this section out to make it coherent reading. Page 11-first paragraph: following sentence could be modified as- "dead HIV-1 viruses....." dead HIV-1 particles carrying NTD reverse charge substitutions in IN regained....., (since HIV-1 itself implies virus) Fig 1 legend- SSC- should be stable synaptic complex (not contact) Page 7- second sentence "SCC"- possibly it should be SSC. Fig 3b- it might be helpful to point out in figure legend how the multiple intasome alignment was performed (software and other technical details) to get the flexibility values of 30-40 angstrom.