



Correction

# Correction: Franz et al. Unraveling a Force-Generating Allosteric Pathway of Actomyosin Communication Associated with ADP and P<sub>i</sub> Release. *Int. J. Mol. Sci.* 2021, 22, 104

Peter Franz <sup>1</sup>, Wiebke Ewert <sup>2</sup>, Matthias Preller <sup>2,3</sup> and Georgios Tsiavaliaris <sup>1,\*</sup>

<sup>1</sup> Cellular Biophysics, Institute for Biophysical Chemistry, Hannover Medical School, 30625 Hannover, Germany

<sup>2</sup> Structural Bioinformatics and Chemical Biology, Institute for Biophysical Chemistry, Hannover Medical School, 30625 Hannover, Germany

<sup>3</sup> Department of Natural Sciences, University of Applied Sciences Bonn-Rhein-Sieg, 53757 Sankt Augustin, Germany

\* Correspondence: Tsiavaliaris.Georgios@mh-hannover.de

## Table and Figure Legend

The author wishes to make the following correction to this paper [1]:

In the original article, there were following mistakes:

A common term was incorrectly used in the legend for Table 2. The incorrect parameters “Steady-state ATPase” should be replaced with “Steady-state ATPase Activity”. A parameter was incorrectly assigned in the legend for Table 4. The incorrect parameters “ $k'_{+5}/K'_5K'_6$ ” should be replaced with “ $k'_{+5}K'_5K'_6$ ”. Parameters were incorrectly assigned in the legend for Figure 5. The incorrect parameters “ $K'_5K'_6$ ” should be replaced with “ $1/(K'_5K'_6)$ ”. Parameters were incorrectly assigned in the legend for Figure 6. The incorrect parameters “ $K'_{DPA}k_{+4}$ ” should be replaced with “ $k_{+4}K'_{DPA}$ ”.

## Error in Table

In the original article, there was a mistake in Table 3 as published. Rate and equilibrium constants, and corresponding values were incorrectly assigned. The corrected Table 3 appears below.

**Table 3.** Transient kinetic parameters and equilibrium constants in the absence of actin.

	Unit	M765 <sup>wt</sup>	M765 <sup>AA</sup>	M765 <sup>GGG</sup>
<b>ATP binding to myosin <sup>1</sup></b>				
$K_1k_{+2}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	$0.48 \pm 0.01$	$0.38 \pm 0.01$	$0.38 \pm 0.01$
$k_{-2}$	( $\text{s}^{-1}$ )	$0.79 \pm 0.49$	$0.54 \pm 0.24$	$0.43 \pm 0.25$
$k_{+3}+k_{-3}$	( $\text{s}^{-1}$ )	$42 \pm 1$	$61 \pm 2$	$106 \pm 8$
<b>ADP binding to myosin <sup>1</sup></b>				
$k_{-5}K_6$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	$0.58 \pm 0.02$	$0.38 \pm 0.02$	$0.49 \pm 0.01$
$k_{+5}$	( $\text{s}^{-1}$ )	$1.6 \pm 0.1$	$1.8 \pm 0.1$	$1.9 \pm 0.1$
$1/(K_5K_6)$	( $\mu\text{M}$ )	$2.8 \pm 0.2$	$4.7 \pm 0.4$	$3.9 \pm 0.2$
<b>Rate of P<sub>i</sub> release <sup>1</sup></b>				
$k_{+4}$	( $\text{s}^{-1}$ )	$0.02 \pm 0.01$	n.d.	$0.02 \pm 0.01$

<sup>1</sup> at 20 °C.

In the original article, there were mistakes in Tables 4 and 5 as published. Rate and equilibrium constants and a unit were incorrectly assigned. The corrected Tables 4 and 5 appear below.



**Citation:** Franz, P.; Ewert, W.; Preller, M.; Tsiavaliaris, G. Correction: Franz et al. Unraveling a Force-Generating Allosteric Pathway of Actomyosin Communication Associated with ADP and P<sub>i</sub> Release. *Int. J. Mol. Sci.* 2021, 22, 104. *Int. J. Mol. Sci.* **2022**, *23*, 11121. <https://doi.org/10.3390/ijms231911121>

Received: 1 April 2022

Accepted: 6 July 2022

Published: 22 September 2022

**Publisher’s Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Table 4.** Transient kinetic parameters and equilibrium constants in the presence of actin.

	Unit	M765 <sup>wt</sup>	M765 <sup>AA</sup>	M765 <sup>GGG</sup>
<b>Actomyosin interactions in the absence and presence of ADP</b>				
$k'_{+A}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	$0.64 \pm 0.03$	$0.61 \pm 0.03$	$0.61 \pm 0.03$
$k'_{-A}$	( $\text{s}^{-1}$ )	0.003	0.004	0.005
$1/K'_A$	( $\mu\text{M}$ )	$0.0057 \pm 0.0005$	$0.010 \pm 0.009$	$0.011 \pm 0.009$
$k'_{+DA}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	$0.12 \pm 0.01$	n.d.	$0.18 \pm 0.01$
$k'_{-DA}$	( $\text{s}^{-1}$ )	$0.006 \pm 0.001$	n.d.	$0.005 \pm 0.001$
$1/K'_{DA}$	( $\mu\text{M}$ )	$0.063 \pm 0.002$	n.d.	$0.024 \pm 0.001$
<b>ATP interactions of actomyosin</b>				
$K'_1 k'_{+2}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	$0.24 \pm 0.01$	$0.32 \pm 0.01$	$0.92 \pm 0.01$
$k'_{+2}$	( $\text{s}^{-1}$ )	$719 \pm 22$	$871 \pm 80$	$923 \pm 19$
$k'_{-2}$	( $\text{s}^{-1}$ )	$0.08 \pm 0.05$	$0.62 \pm 0.05$	$1.48 \pm 0.13$
$1/K'_1$	( $\mu\text{M}$ )	$3200 \pm 130$	$2702 \pm 279$	$883 \pm 30$
<b>ADP interactions of actomyosin</b>				
$k'_{-5} K'_6$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	$>1.0 / >0.74$	$>1.47 / >2.94$	$4.7 \pm 1 / 3.6 \pm 1$
$1/(K'_5 K'_6)$	( $\mu\text{M}$ )	$135 \pm 10^5$	$34 \pm 4^5$	$3.4 \pm 1^6$
$k'_{+5}$	( $\text{s}^{-1}$ )	$>100^7$	$>100^7$	$16 \pm 1^8$
<b>P<sub>i</sub> kinetics of actomyosin</b>				
$k'_{+4}$	( $\text{s}^{-1}$ )	$3.8 \pm 1.1$	n.d.	$14.4 \pm 1.0$
$k'_{+4} K'_{DPA}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	$0.04 \pm 0.01$	n.d.	$0.79 \pm 0.08$
$1/K'_{DPA}$	( $\mu\text{M}$ )	$94 \pm 32$	n.d.	$18 \pm 3$
<b>Weak-to-strong transition</b>				
$k'_{\text{weak-strong}}$	( $\text{s}^{-1}$ )	$1.0 \pm 0.01$	n.d.	$2.6 \pm 0.04$
<b>Duty ratio</b>				
$t_{\text{strong}}/t_{\text{total}}$	%	$3 \pm 1$	$<4 \pm 1$	$49 \pm 4$
Experimental	%	$<1$	n.d.	35

<sup>1</sup> Calculated:  $k'_{-A}/k'_{+A}$ ; <sup>2</sup> calculated:  $k'_{-DA}/k'_{+DA}$ ; <sup>3</sup> calculated from  $k'_{+5}K'_5K'_6$ ; <sup>4</sup> obtained from linear fit of  $k_{\text{fast}}$  of competitive ATP/ADP binding experiment with 25  $\mu\text{M}$  ATP; <sup>5</sup> obtained from ADP-inhibition of ATP-induced dissociation; <sup>6</sup> obtained from hyperbolic fits of  $A_{\text{slow}}$  and  $A_{\text{fast}}$  (Figure 5g); <sup>7</sup> estimated from the rate of ADP inhibition of ATP-induced dissociation at excess ADP concentrations; <sup>8</sup> y-intercept of hyperbola in Figure 5i; n.d. not determined.

**Table 5.** Parameters used for the estimation of the fractional occupancies of intermediate states.

	Unit	M765 <sup>wt</sup>	M765 <sup>AA</sup>	M765 <sup>GGG</sup>
<b>Equilibrium constants</b>				
$K'_{DPA}$	( $\mu\text{M}^{-1}$ )	0.01	0.01	0.05
$K'_4$	( $\mu\text{M}^{-1}$ )	0.00001	0.00001	0.00001
$K'_5$	-	0.5	0.74	7.14
$K'_6$	( $\mu\text{M}^{-1}$ )	0.02	0.02	0.02
$K'_1$	( $\mu\text{M}^{-1}$ )	0.0003	0.004	0.001
$K'_2$	-	8988	1405	624
$K'_{TA}$	( $\mu\text{M}^{-1}$ )	0.001	0.001	0.001
$K_3$	-	9.5	9.2	9.6
$K'_3$	-	95	92	96
<b>Rate constants of forward reactions</b>				
$k'_{+DPA}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	10	10	50
$k'_{+4}$	( $\text{s}^{-1}$ )	3.8	5.0	14.4
$k'_{+5}$	( $\text{s}^{-1}$ )	235	160	20
$k'_{+6}$	( $\text{s}^{-1}$ )	1000	1000	1000
$k'_{+1}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	100	100	100
$k'_{+2}$	( $\text{s}^{-1}$ )	719	871	923
$k'_{+TA}$	( $\text{s}^{-1}$ )	1000	1000	1000
$k_{+3}$	( $\text{s}^{-1}$ )	38	55	96
$k'_{+3}$	( $\text{s}^{-1}$ )	38	55	96

Table 5. Cont.

	Unit	M765 <sup>wt</sup>	M765 <sup>AA</sup>	M765 <sup>GGG</sup>
<b>Rate constants of backwards reactions</b>				
$k'_{-DPA}$	(s <sup>-1</sup> )	1000	1000	1000
$k'_{-4}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	0.000038	0.00005	0.000144
$k'_{-5}$	(s <sup>-1</sup> )	470	216	2.8
$k'_{-6}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	20	20	20
$k'_{-1}$	(s <sup>-1</sup> )	333300	250000	88500
$k'_{-2}$	(s <sup>-1</sup> )	0.08	0.62	1.48
$k'_{-TA}$	( $\mu\text{M}^{-1}\text{s}^{-1}$ )	1	1	1
$k_{-3}$	(s <sup>-1</sup> )	4	6	10
$k'_{-3}$	(s <sup>-1</sup> )	0.4	0.6	1

### Text Correction

There were following errors in the original article.

A correction has been made to 2. Results and Discussion:

1. Paragraph 8. The incorrect constants " $K'_5K'_6$ " should be replaced with " $1/(K'_5K'_6)$ ".
2. Paragraph 10. The incorrect constants " $K'_{DPA}$ " should be replaced with " $1/K'_{DPA}$ ". The incorrect constants " $K'_{DPA}k'_{+4}$ " should be replaced with " $k'_{+4}K'_{DPA}$ ".
3. Paragraph 11. The incorrect constants " $K'_{DPA}$ " should be replaced with " $1/K'_{DPA}$ ".

A correction has been made to 3. Conclusions, Paragraph 1. The incorrect constants " $K'_5K'_6$ " should be replaced with " $1/K'_5K'_6$ ".

The authors state that the scientific conclusions are unaffected. This correction was approved by the Academic Editor. The original publication has also been updated.

### Reference

1. Franz, P.; Ewert, W.; Preller, M.; Tsiavaliaris, G. Unraveling a Force-Generating Allosteric Pathway of Actomyosin Communication Associated with ADP and Pi Release. *Int. J. Mol. Sci.* **2021**, *22*, 104. [[CrossRef](#)] [[PubMed](#)]